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Reports
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April 19, 1999

## FINAL REPORT

# MULTISTRATA MULTIPURPOSE RIPARIAN BUFFERS STRIPS for NPS ABATEMENT in AGROECOSYSTEMS

Cooperative Agreement No.: 28-C3-706

Principle Investigator: Dr. Kyle Hoagland, University of Nebraska

Prepared by: Dr. Mike Dosskey, USDA National Agroforestry Center

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## Project Background

Nonpoint source (NPS) runoff of fertilizers, pesticides, and sediment from agricultural fields is the primary cause of declining surface water quality nationwide (USEPA 1994; Carey 1991). This problem is particularly acute in the Great Plains where there is a greater proportion of land used for agriculture (Butters et al. 1992). Agricultural runoff accounts for 60 to 80% of surface water impairment in this region compared to 50 to 60% nationwide (USEPA 1990).

Perennial vegetation along streams and waterways, called riparian buffer strips, can filter and retain contaminants from agricultural runoff before they enter streams, thus improving surface water quality (Lowrance et al. 1997; Barling and Moore 1994; Ritter 1988). The USDA and several states now recommend establishment of riparian buffers for this purpose (NRCS, 1997; Welsch 1991) and provide financial and technical incentives to encourage farmers to install buffer strips. The potential benefit of establishing riparian buffer strips in the Great Plains could be very large because decades of economic pressure have encouraged the replacement of natural riparian vegetation with crops (Schmidt and Teels 1991).

Convincing mid-western farmers to install riparian buffer strips will require clear evidence of the water quality benefits that will result from their efforts. There has been little research on pesticide levels in stream water in this region and none that indicates improvement resulting from installation of riparian buffer strips. Regionally-relevant, quantitative information would satisfy a critical need to prove that the buffer concept can work for pesticides in this region and provide the basis for better estimates of how much improvement we can expect.

## Project Objectives

The goal of this project was to establish a watershed monitoring site that can be used to demonstrate that installation of riparian buffer strips can reduce nonpoint source pollution in small agricultural streams. Within the scope of this agreement, the initial stages of site development were conducted. Collaborative activities were designed to achieve five specific objectives:

1) Install runoff gaging stations in three small agricultural watersheds and initiate monitoring water and pollutant discharge characteristics of the streams;
2) Map watershed boundaries and surface runoff flow network within the watersheds;
3) Construct a history of cropping and associated fertilizer and pesticide application to fields within the gaged watersheds, and develop a database on allied site factors that may influence agricultural runoff;
4) Conduct a literature review of pollutant runoff from agricultural fields (sediment, nutrients, and pesticides), including observed concentrations in field runoff and streams, and temporal patterns of variability of stream concentrations.

5) Incorporate this project into a larger demonstration to promote riparian buffer strips that includes field-scale installations of various buffer designs and plot-scale demonstrations of runoff filtering performance by those designs.

## Methods

The project was implemented at the University of Nebraska's Agricultural Research and Development Center (ARDC) near Mead, Nebraska (Appendix A). This site is representative of gently sloping agricultural lands in eastern Nebraska. This location provides the project team with full control of farmland occupied by the demonstration and enhances opportunity for public exposure through tie-ins with existing university and cooperative extension activities. The component activities of this project are described below.

- *Watershed Gaging and Monitoring*: The demonstration watersheds are approximately 40, 140, 1600 acres in size and are drained by ephemeral steams that flow mainly in spring for varying periods after larger rainfall events. Local groundwater is about 45 ft below the land surface, so all water in the streams is derived from surface runoff. The topography is nearly level with slopes from about 1 to 3%. Soils are primarily silty clay loams, with well-drained Sharpsburg series in the higher areas and poorly-drained Filmore and Butler series near the stream courses.

The large (1600 ac) watershed drains a mixture of land uses including cultivated crops (dryland and irrigated), dairy, forest, and pasture (T. 14 N., R. 8 E., Sections 23, 14, 11) through a channelized and straightened stream course. Land cover in the two smaller watersheds (T. 14 N., R. 8 E., Section 26) is dominantly cultivated, non-irrigated row crops. The medium (140 ac) and small (40 ac) watersheds drain through vegetated channels that resemble narrow grassed waterways.

Three H-flumes mounted on concrete wing foundations were installed in the summer of 1995 within Section 26 (Appendix B) to monitor runoff from these watersheds. A 4-ft-high flume gages runoff from the large watershed, and 2-ft-high flumes gage the medium and small watersheds. Each flume is equipped with pressure transducer and data logger (model R-2100, Telog Instruments, Inc., Henrietta, NY) to monitor discharge volumes, and an autosampler (model 3700, ISCO, Inc., Lincoln, NE) for collection of runoff water samples for evaluating pollutant concentrations. The instruments were installed each spring to collect data during the growing season and removed each fall to avoid freezing damage. No runoff typically occurred from these watersheds during the winter months.

During storm runoff events, stream water samples were collected at pre-set time intervals. When stream discharge occurred, the auto-samplers would collect samples every 30 minutes for as long as they detected discharge or until all 24 bottles in the instrument tray were filled (3.5 hrs at 3 bottles each sampling time or 11.5 hrs at 1 bottle each sampling time). The samples were retrieved within 2 days of the end of each event and delivered to the UNL Water Sciences Laboratory for analysis. Only pesticide concentrations were evaluated in this project.

Table 1: List of the pesticides evaluated, their relative occurrence in the dissolved phase of surface runoff, and the reporting (detection) limit of analysis. Deethylatrazine and deisopropylatrazine are degradation products of atrazine. Solution phase runoff potential as reported in the 1997 Farm Chemicals Handbook on a four-level scale: extra small, small, medium, large.

| Pesticide | Potential for Surface Runoff in Solution Phase | Reporting Limit (ug/L) |
|---|---|---|
| EPTC | | 0.20 |
| Butylate | | 0.20 |
| Propachlor | Medium | 0.20 |
| Deisopropylatrazine | | 0.50 |
| Deethylatrazine | | 0.20 |
| Trifluralin | Medium | 0.20 |
| Simazine | Large | 0.20 |
| Atrazine | Large | 0.20 |
| Prometon | Large | 0.20 |
| Propazine | Large | 0.20 |
| Metribuzin | Large | 0.20 |
| Acetochlor | | 0.20 |
| Alachlor | Medium | 0.20 |
| Cyanazine | Medium | 0.50 |
| Metolachlor | Large | 0.20 |
| Pendimethalin | Medium | 0.20 |
| Permethrin | Small | 0.50 |

Water samples were analyzed for dissolved concentrations of 17 different pesticides (Table 1). Pesticides were analyzed using solid phase extraction from filtered water samples followed by isotope dilution gas chromatography/ mass spectrometry as described in Cassada et al. (1994) and Spaulding et al. (1994). Results of the water monitoring are presented in the following section entitled “Results of Watershed Monitoring”.

- *Watershed Mapping:* A topographic survey was conducted in summer of 1997 to delineate boundaries of the two smaller watersheds and to provide additional information on spatial patterns of surface runoff from fields to the improved waterway network (Appendix B). Flow directions were determined by visually estimating the topographic gradients in sloping portions of these watersheds. On nearly flat portions of the landscape, a rod and level were used to identify likely flow directions from fields to drainage ditches.

The drainage network of the large watershed was delineated approximately using a combination of aerial photographs, NRCS soil survey maps, and existing USGS topographic maps (Appendix C).

- *Crop and Pesticide Use History:* Crop and pesticide use history was constructed for all fields within the medium and small watersheds (Appendix D). Records were obtained for 1993 through 1997 from the farm manager for Section 26 (Jim Brandle, UNL). These data were collected in order to correlate observations of pesticides in runoff with application to farm fields within these watersheds.

- *Literature Review:* A computerized keyword citation search was conducted by the UNL Library for research publications containing data on pesticide concentrations runoff from agricultural fields. Computer output from this search is presented in Appendix E.

- *Riparian Buffer Demonstration Site:* This watershed monitoring project was part of a larger demonstration to study and promote riparian buffer strips in Nebraska. The larger demonstration included two other component sites located within Section 26: a plot-scale filter strip demonstration, and field-scale riparian buffer display (Appendix B). These two components are described below.

1) Plot-scale filter strip/ NPS abatement demonstration: This component was funded by a grant from the USEPA and Nebraska Department of Environmental Quality. For this component, plots were established in spring 1995 in Section 26 at the ARDC near the study watersheds. They were designed to test and demonstrate NPS abatement for different buffer widths and vegetative compositions. Four basic vegetative combinations (newly-planted grass, newly-planted mixed grass/shrub/tree, pasture, and conventional row crop) and two sizes represent buffer with widths of 25 ft and 50 ft. Each design was replicated 5 times. In each of the three subsequent summers, tests were run on each plot to determine the NPS runoff abatement effectiveness of each design. For each demonstration, simulated rainfall and crop field runoff (containing realistic levels of sediment, nitrate, phosphate, and

pesticides) were applied to each plot. The amount of each NPS pollutant collected at the bottom was used to determine the effectiveness of each buffer design. Results were compared for the different buffer widths, vegetative compositions, and pollutant types.

2) Field-scale riparian buffer designs display: This component was funded by a different cooperative agreement between the National Agroforestry Center and the University of Nebraska. This demonstration displays three alternative designs for riparian buffer strip. They include grass, grass/shrub, and grass/shrub/tree designs. These designs are displayed in a 50-ft-wide strip along 750 ft of stream bank. Each vegetation type occupies a 250 ft of stream bank. The grass buffer segment was planted entirely in switchgrass to display a conventional filter strip alternative. The tree and shrub components add wildlife habitat diversity, bank stabilization, and aesthetic benefits.

## Results of Watershed Monitoring

Field codes for water sample locations and times are presented in Appendix F. Laboratory analysis reports are presented in Appendix G along with some tabulation and graphical summaries of those results. Due to an unknown malfunction, no water discharge data was successfully recorded.

Table 2: Runoff dates and number of samples obtained for each flume.

| Sampling Dates | Number of Samples Collected | | |
|---|---|---|---|
| | Large Flume | Small, North Flume | Small, South Flume |
| Sept. 23, 1997 | 1 | 1 | |
| Oct. 31, 1997 | | 8 | 3 |
| Nov. 19, 1997 | | 1 | |
| May 15, 1998 | 14* | | |
| May 20, 1998 | 8* | 5* | |
| June 9, 1998 | | 8* | |
| Nov. 10, 1998 | 5 | 8 | |

* indicates results that were tabulated and graphed in Appendix G.

Seven runoff events were successfully monitored in 1997 and 1998. Table 2 indicates the number of water samples collected from each flume and analyzed for pesticides. Monitoring in 1996 and summer of 1997 were unsuccessful due to delays in spring instrument setup and subsequent summer drought. All monitored runoff events occurred after spring planting and herbicide application.

In general, the smallest watershed yielded fewer and shorter duration runoff events; only 1 event on October 31, 1997. The medium and large watersheds had discharge for more rainfall events and for longer discharge periods, and therefore yielded more water samples.

Concentrations of pesticides in runoff were clearly higher for spring events (May 15 - June 9) than later events (Sept. 23-Nov. 19). Out of seven fall samplings only 2 events produced detections of >1 ug/L of any pesticide (atrazine on Nov. 19, 1997 and metolachlor on Nov. 10, 1998) and their concentrations were very low compared the spring runoff concentrations.

All spring runoff events produced substantial concentrations of several pesticides. As many as seven different pesticides (excluding atrazine degradation products) were detected in samples at greater than 1 ug/L. All samples contained high concentrations atrazine (up to 294 ug/L) with lesser concentrations of atrazine degradation products, alachlor, and metolachlor. The current EPA limit for atrazine in drinking water is 3 ug/L. Concentrations of these major pesticides were generally similar in runoff from the medium and large watersheds.

Among the remaining pesticides detected at concentrations greater than 1 ug/L, the medium watershed had one runoff event that additionally contained metribuzin. The large watershed had one runoff event that additionally contained propazine, cyanazine, metribuzin, and acetochlor.

The pesticide-use history 1993-1997 for fields within the medium watershed can account for all of the pesticides detected above 1 ug/L in runoff, except for metolachlor. The runoff data indicates that metolachlor was applied in this watershed in 1998, but the pesticide use history for 1998 has not been constructed. Pesticide use history of the larger watershed was also not constructed, but since it contains a variety of land uses, we expect that runoff would contain a greater variety of pesticides.

Temporal patterns of runoff concentrations were observed. In the large watershed on May 15, 1998 contaminant concentrations increased rapidly over time until peaking between 90 and 150 minutes after the start of runoff, then decreased. In a subsequent event on May 20, concentrations started high, decreased to a low level between 90-150 minutes, and then rose again to near initial concentrations. The explanation of these contradictory patterns is unknown.

In the medium watershed, temporal patterns were equally unclear. The May 20 event had low pesticide concentrations early in the event (0-30 min), but a later sampling at 210 minutes had much higher concentrations of pesticides. The following event on June 9 had the opposite pattern; starting high and then decreasing through the event.

The one clear temporal pattern was that concentrations of all pesticides rose or fell together during these runoff events.

## Project Accomplishments

- The watershed monitoring site whose development was funded by this cooperative agreement has been established. Substantial aspects of each specific objective have been achieved:
    1) Runoff gaging stations were installed in three small agricultural watersheds and some pesticide discharge characterization has been conducted;
    2) Watershed boundaries and the surface runoff pathways have been mapped for the medium and small watersheds;
    3) A crop, fertilizer, and pesticide use history has been constructed for fields within the two smaller watersheds;
    4) A brief literature citation search was conducted for publications containing data on pesticide concentrations in runoff and agricultural streams;
    5) This project has become a component of a larger riparian buffer demonstration that includes field scale installations of various buffer designs and plot demonstrations of runoff filtering performance by those designs.

- This cooperative project helped leverage USEPA funds ($157,920) and in-kind contributions from UNL ($101,100) for establishing and conducting the plot demonstrations of runoff filtering performance. The plot demonstration created data used thus far in several extension publications, scientific presentations, and one journal article. Plans have been made for using the plots in additional future.

- This project helped create important partnerships between the National Agroforestry Center and several prominent conservation agencies, a non-governmental organization, and university divisions on work related to riparian buffers. A strong working relationship should continue between these partners into the future. The partners include:

USDA Forest Service, National Agroforestry Center.
UNL Agricultural Research and Development Center
    Sch. of Natural Resource Sciences
    Dept. of Biological System Engineering
    Cooperative Extension Service
    Center for Sustainable Agricultural Systems
Nebraska Forest Service
Nebraska Department of Environmental Quality
USEPA Region 7
Lower Platte South Natural Resources District

## Future Use of the Project Site

The site is now available for the study of pollutant and water runoff from low-gradient agricultural watersheds in southeastern Nebraska. The project team has discussed proposal development for funding studies to quantify the impact of installation of riparian buffer strips on nonpoint source pollution in small agricultural streams.

Among other approaches, one study could directly compare pollutant discharge under current land use conditions with subsequent pollutant discharges after installation of riparian buffers. A broader study would include the testing of models, such as AGNPS, for predicting runoff under both current and buffered conditions. If the models reasonably represent actual measurements of runoff, then the models would provide a mechanism to predict runoff benefits of riparian buffers at other sites in this region.

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# APPENDIX

Appendix A: Location of the Demonstration Site in Eastern Nebraska.

Appendix B: Locations of Components of the Riparian Buffer Demonstration Site, including Flume Locations and Boundaries of the Medium and Small Watersheds in Section 26.

Appendix C: Drainage Networks of the Large, Medium, and Small Monitoring Watersheds.

Appendix D: Crop and Pesticide Use History, 1993-1997, for the Medium and Small Watersheds in Section 26.

Appendix E: Citation Search Output: Data Pertaining to Pesticide Runoff from Agricultural Fields.

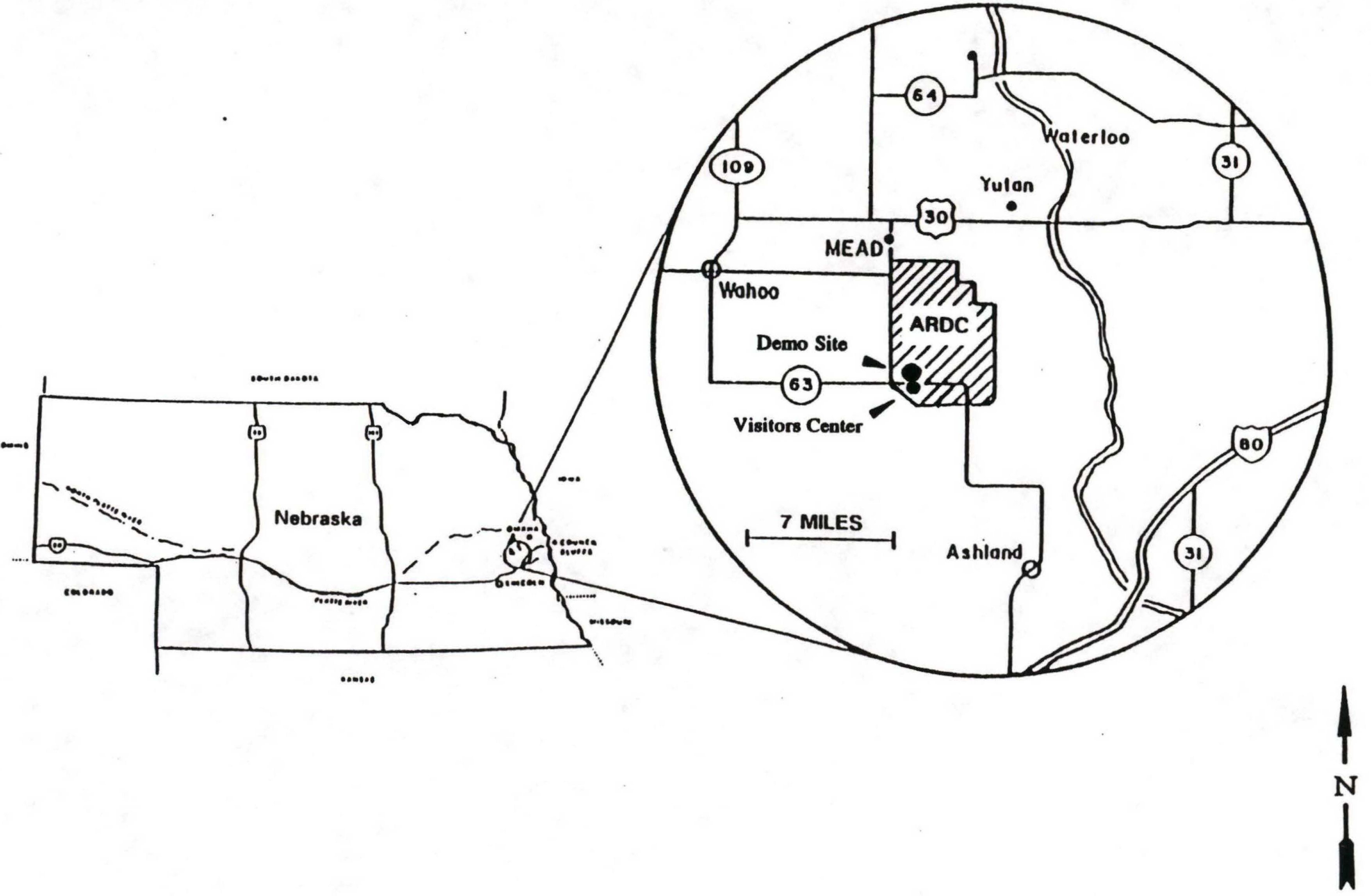
Appendix F: Water Sampling Protocol and Sample Codes used on Laboratory Analytical Reports.

Appendix G: Laboratory Analytical Results: Laboratory Analytical Reports, Tabulations, and Graphs of Some Results.

# APPENDIX A

## Location of the Demonstration Site in Eastern Nebraska

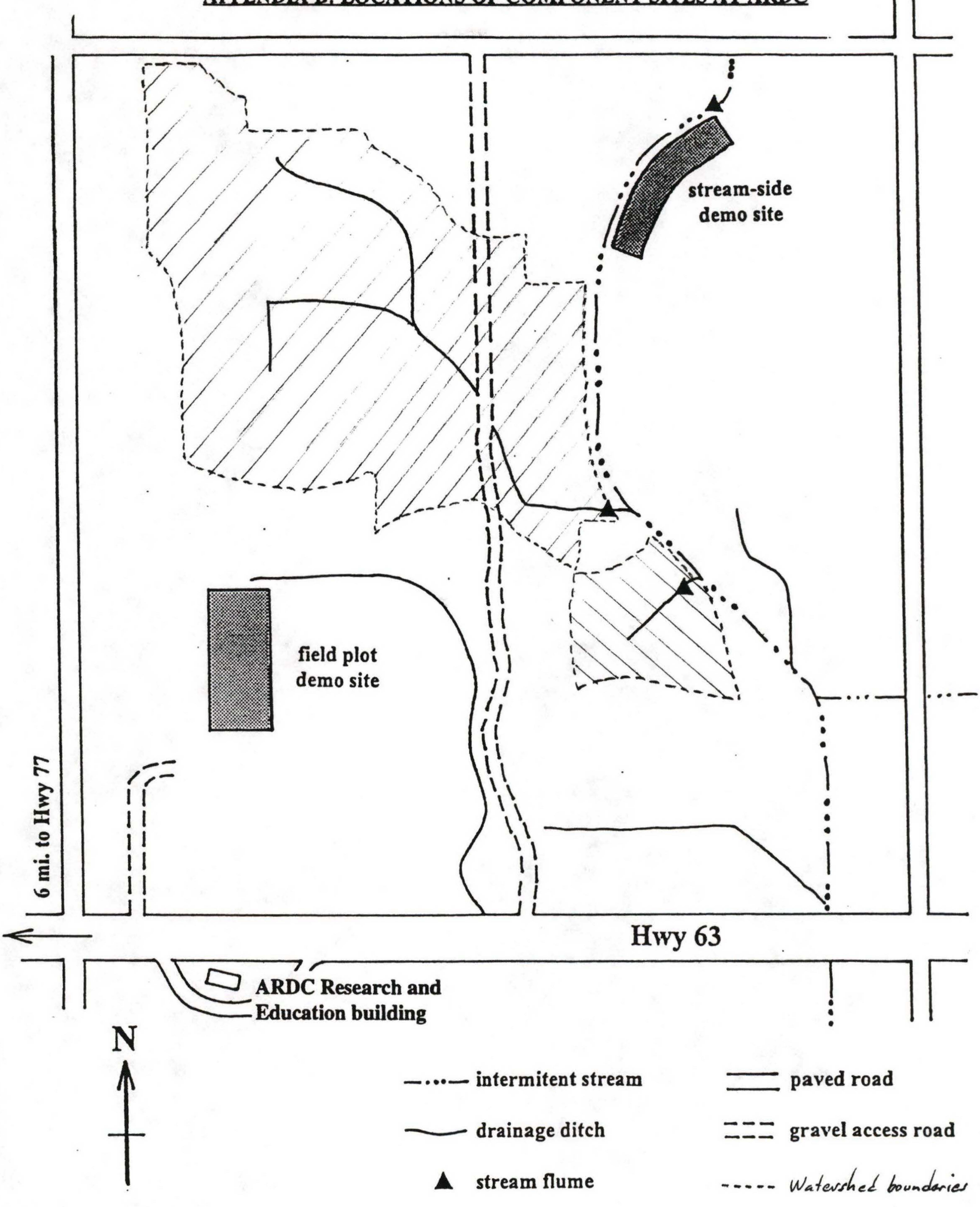
# APPENDIX A: LOCATION OF THE DEMONSTRATION SITE


64
Waterloo
109
31
Yulan
30
MEAD
Wahoo
ARDC
Demo Site
63
Visitors Center
80
7 MILES
Ashland
31
Nebraska
N

# APPENDIX B

Locations of Components of the Riparian Buffer Demonstration Site, including Flume Locations and Boundaries of the Medium and Small Watersheds in Section 26.

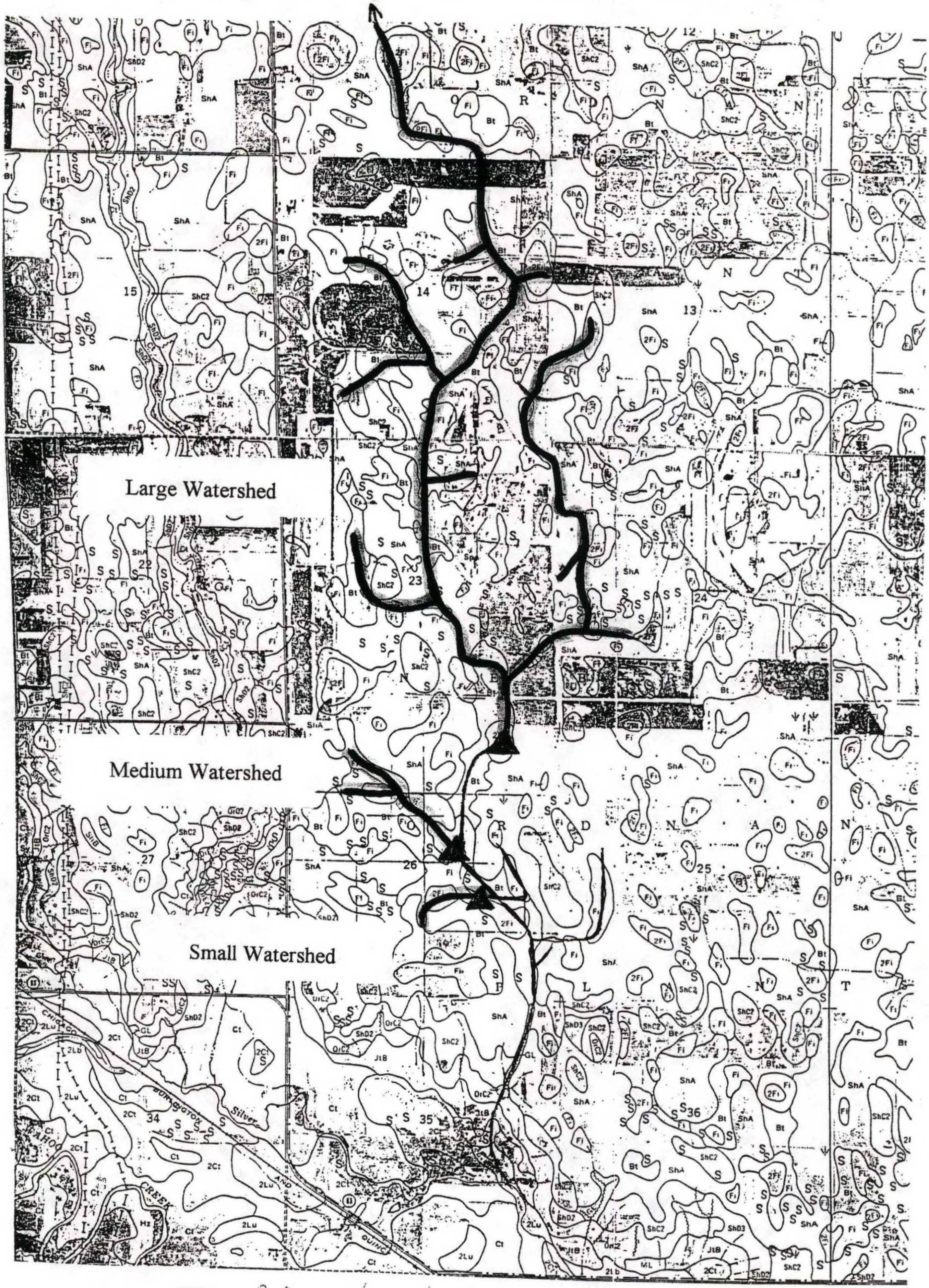
## APPENDIX B: LOCATIONS OF COMPONENT SITES AT ARDC


stream-side demo site
field plot demo site
6 mi. to Hwy 77
Hwy 63
ARDC Research and Education building
N
intermitent stream
paved road
drainage ditch
gravel access road
▲ stream flume
Watershed boundaries

# APPENDIX C

## Drainage Networks of the Large, Medium, and Small Monitoring Watersheds

# APPENDIX C: MAP OF THE LARGE WATERSHED DRAINAGE NETWORK.


Large Watershed
Medium Watershed
Small Watershed

— Drainage channel network

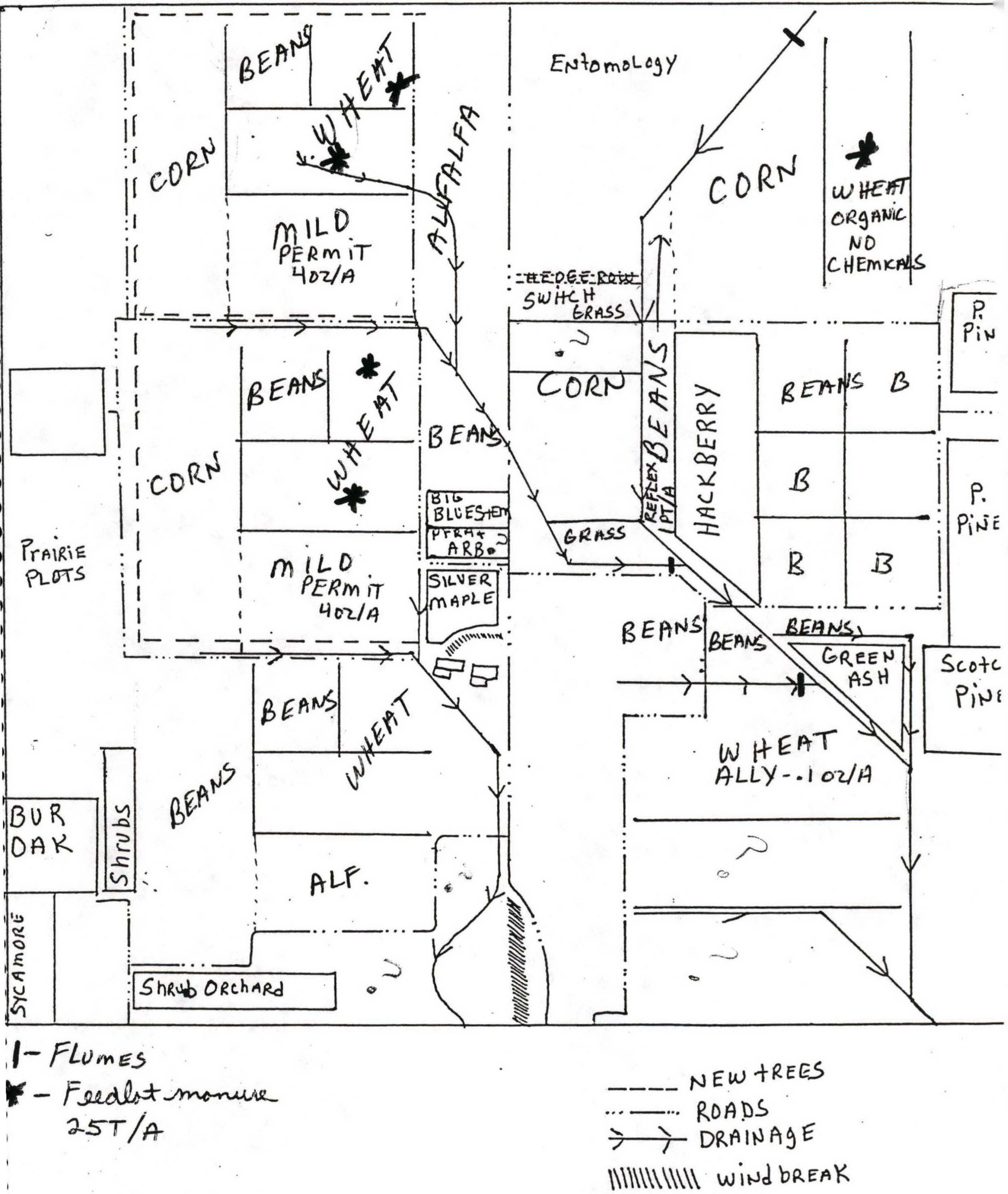
▬ Gaged drainage ways

▲ Gaging station

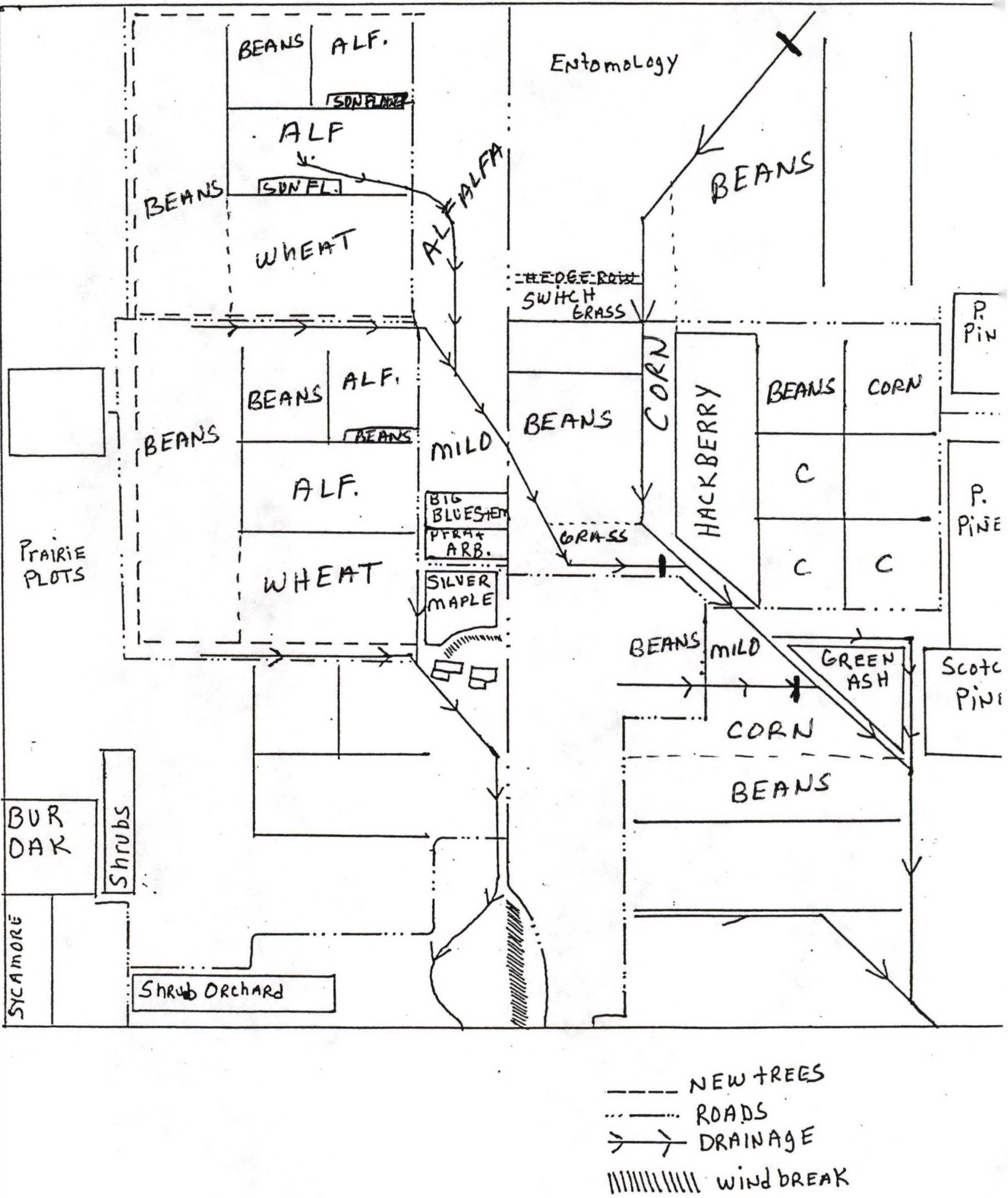
# APPENDIX D

Crop and Pesticide Use History, 1993-97, for the Medium and Small Watersheds in Section 26.

"97"


BEANS
WHEAT
CORN
ALFALFA
MILD PERMIT 4oz/A
Entomology
CORN
WHEAT ORGANIC NO CHEMICALS
~~HEDGE ROW~~
SWITCH GRASS
P. Pin
BEANS
CORN
BEANS
HACKBERRY
BEANS B
B
B
B
P. Pine
REFLEX 1PT/A
GRASS
BEANS
WHEAT
CORN
BIG BLUESTEM
PFRA & ARB.
MILD PERMIT 4oz/A
SILVER MAPLE
PRAIRIE PLOTS
BEANS
BEANS
BEANS
GREEN ASH
Scotc Pine
BEANS
WHEAT
BEANS
WHEAT ALLY - .1oz/A
BUR OAK
Shrubs
ALF.
SYCAMORE
Shrub ORCHARD
| - FLUMES
✱ - Feedlot manure 25T/A
NEW TREES
ROADS
DRAINAGE
wind BREAK

"96"


BEANS
ALF.
SUNFLOWER
ALF
SUNFL.
BEANS
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ALFALFA
Entomology
BEANS
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WHEAT
MILO
BIG BLUESTEM
PFRA + ARB.
SILVER MAPLE
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HACKBERRY
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P. Pine
GRASS
PRAIRIE PLOTS
BEANS
MILO
GREEN ASH
Scotc Pin
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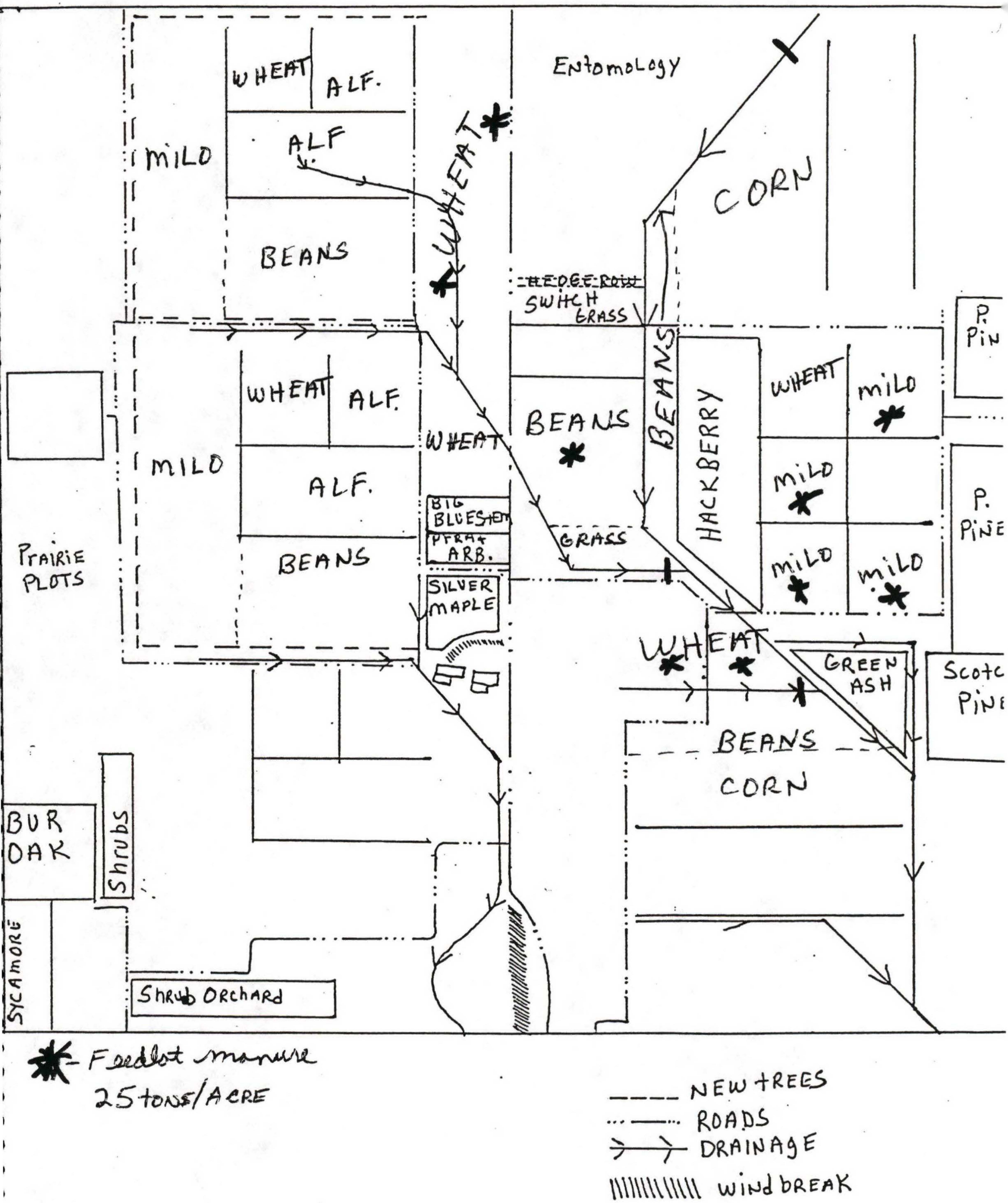
BUR OAK
Shrubs
SYCAMORE
Shrub Orchard
NEW trees
ROADS
DRAINAGE
wind break

# "95"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SWITCH GRASS
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HACKBERRY
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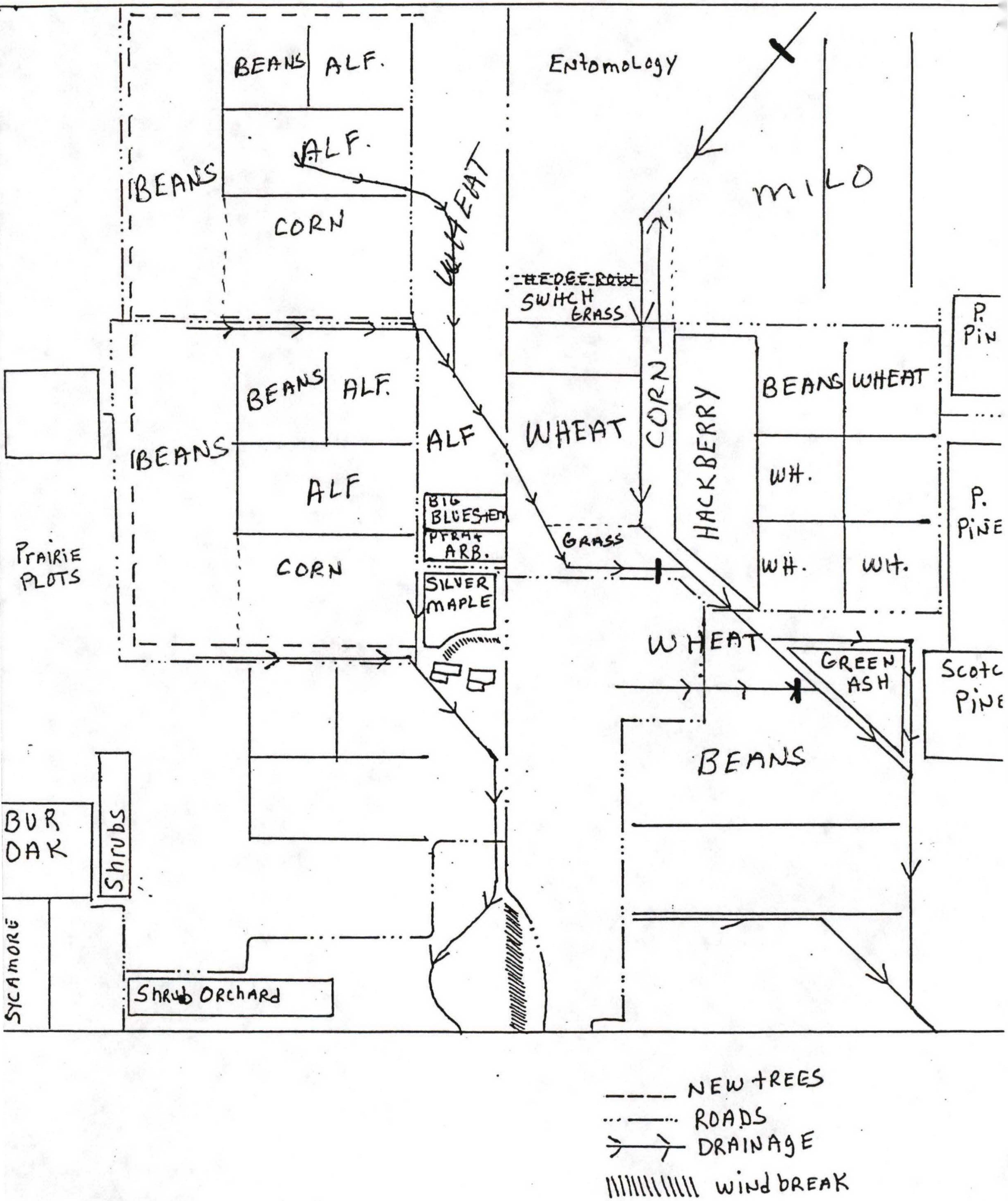
MILO
MILO
P. PIN
P. PINE
BIG BLUESTEM
PFRA ARB.
GRASS
SILVER MAPLE
PRAIRIE PLOTS
WHEAT
GREEN ASH
Scotc PINE
BEANS
CORN
BUR OAK
Shrubs
SYCAMORE
Shrub Orchard
Feedlot manure 25 tons/Acre
NEW TREES
ROADS
DRAINAGE
wind BREAK

" 94 "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WHEAT
GREEN ASH
Scotc PiNE
BEANS
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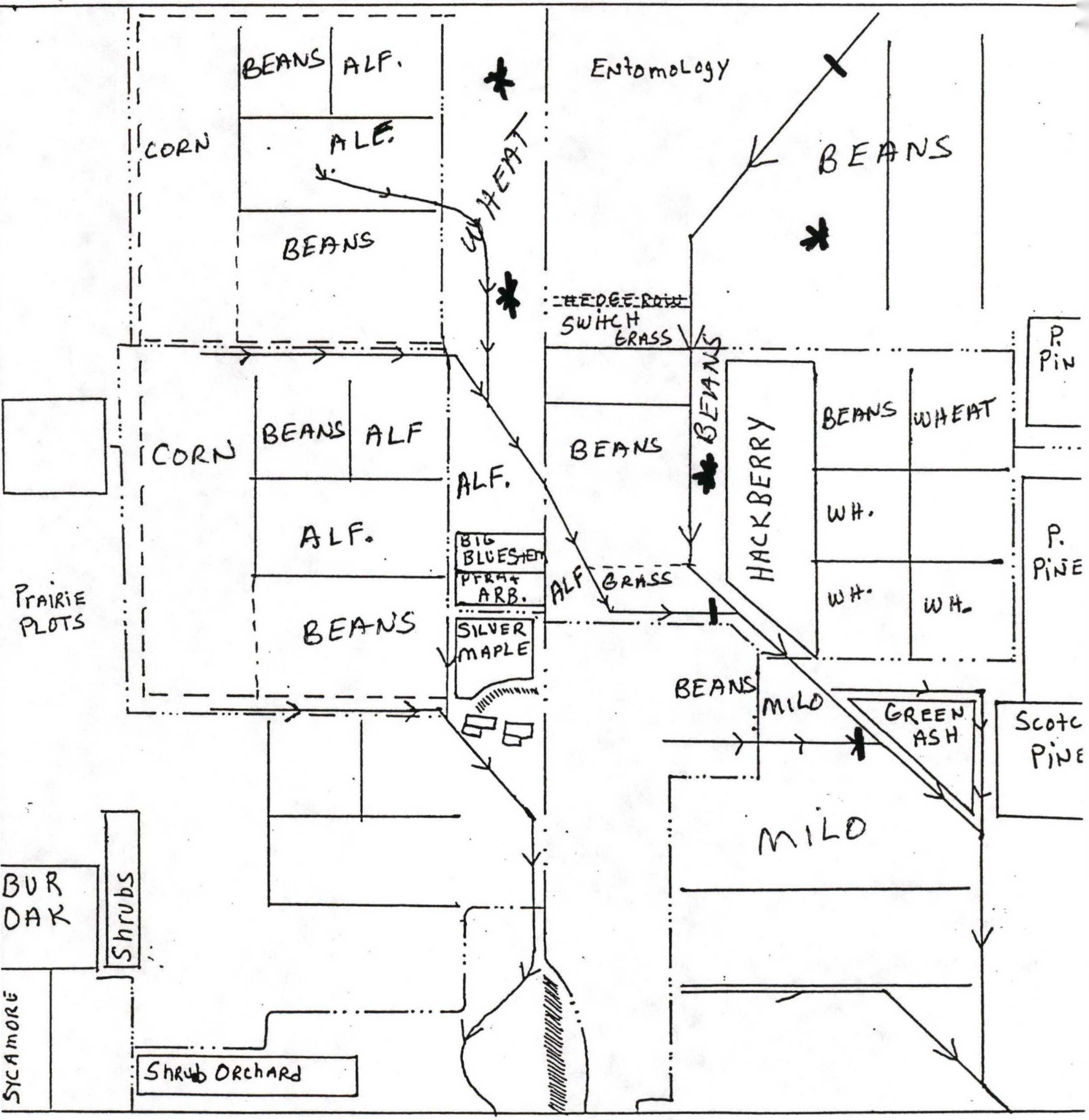
Shrubs
SYCAMORE
Shrub Orchard
NEW trees
ROADS
DRAINAGE
wind break

"93"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P. PinE
BIG BLUESTEM
PFRA ARB.
ALF
GRASS
WH.
WH.
Prairie PLOTS
BEANS
SILVER MAPLE
BEANS
MILO
GREEN ASH
Scotc PinE
MILO
BUR OAK
Shrubs
SYCAMORE
Shrub Orchard

* - Feedlot Manure
25T/A
after wheat harvest in July
" beans " in October

---- NEW trees
......—...... ROADS
—>—> DRAINAgE
||||||||||||| wind BREAK

## Fertilizer and Pesticide Application Code for Maps

Permit - Halosulferon-methyl herbicide
Allg - Metsulferon-methyl herbicide

1993
94
95
96
97 All fields had some herbicide applied unless otherwise noted on map. Also any additional herbicide application is noted on map.

corn - Lariat 4qt/A -
(lasso + atrazine)
alachlor

milo - Lariat 4qt/A

Beans - Lasso - 2qt/A
Sencor - .5lb/A (metribuzin)
scepter - 2.8 oz./A (imazaquin - herbicide)

Wheat - 2,4-D 1.5pt/A

Alfalfa - Sencor DF 1lb/A

Grass - 2,4-D 1qt/A

---

Fertilizer
Corn 150# N/A

milo 125# N/A

wheat 60# N/A

# APPENDIX E

Citation Search Output: Data Pertaining to Pesticide Runoff from Agricultural Fields.

# Literature Search

Subject Pesticides in Agricultural Runoff

```
1 BAI
YT(v.37- )  S590 C3  For SPECIFIC VOLUME STATUS, Check UNL Libraries
atalog

   AUTHOR:  Entry, James A.; Emmingham, William H.
    TITLE:  Influence of vegetation on microbial degradation of atrazine
            and 2,4-dichlorophenoxyacetic acid in riparian soils
   SOURCE:  Canadian Journal of Soil Science (ISSN:0008-4271) v 76  p
            101-6 February '96
 CONTAINS:  bibliography; illustration(s)

1 BAI
YT(scattered)  SB354 A2  For SPECIFIC VOLUME status, check UNL Libraries
atalog

X  AUTHOR:  Briggs, Jeanne; Whitwell, Ted
    TITLE:  Minimizing the pesticide exodus (pesticides in runoff
            water)
   SOURCE:  American Nurseryman (ISSN:0003-0198) v 185  p 58-60+ June 1
            '97
 CONTAINS:  bibliography; illustration(s)

3 BAI
YT(v.1- )  S583 J6  For SPECIFIC VOLUME status, check UNL Libraries
atalog

   AUTHOR:  Gaynor, John D.; Cancilla, Devon A.; Webster, G. R. Barrie
    TITLE:  Comparative solid phase extraction, solid phase
            microextraction, and immunoassay analyses of metolachlor in
            surface runoff and tile drainage
   SOURCE:  Journal of Agricultural and Food Chemistry (ISSN:0021-8561) v
            44  p 2736-41 September '96
 CONTAINS:  bibliography; illustration(s)

4 BAI
YT(v.1- )  TD180 J7  For SPECIFIC VOLUME status, check UNL Libraries
atalog

   AUTHOR:  Clausen, J. C.; Jokela, W. E.; Potter, F. I.;III
    TITLE:  Paired watershed comparison of tillage effects on runoff,
            sediment, and pesticide losses
   SOURCE:  Journal of Environmental Quality (ISSN:0047-2425) v 25  p
            1000-7 September/October '96
 CONTAINS:  bibliography; illustration(s); map

5 BAI
YT(v.75:3- )  S583 A7  For SPECIFIC VOLUME status, check UNL Libraries
atalog

   AUTHOR:  Cai, Zongwei; Monson, Steven J.; Spalding, Roy F.
    TITLE:  Determination of atrazine and hydroxyatrazine in agricultural
            runoff waters by liquid chromatography and fast atom
            bombardment-high resolution mass spectrometry
```

July/August '96
CONTAINS: bibliography; illustration(s)

6 BAI
YT(v.1- ) RA565 A1 B8 For SPECIFIC VOLUME status, check UNL Libraries atalog

AUTHOR: Patty, L.; Guyot, C.
TITLE: Analytical methods for the determination of isoproturon and diflufenican residues in runoff and soil
SOURCE: Bulletin of Environmental Contamination and Toxicology (ISSN: 0007-4861) v 55 p 802-9 December '95
CONTAINS: bibliography; illustration(s)

7 BAI
YT(v.1- ) S622 S5 For SPECIFIC VOLUME status, check UNL Libraries atalog

AUTHOR: Fawcett, Richard S.; Christensen, Brian R.; Tierney, Dennis P.
TITLE: The impact of conservation tillage on pesticide runoff into surface water: a review analysis
SOURCE: Journal of Soil & Water Conservation (ISSN:0022-4561) v 49 p 125-35 March/April '94
CONTAINS: bibliography; illustration(s)

8 BAI
YT(v.1- ) S622 S5 For SPECIFIC VOLUME status, check UNL Libraries atalog

AUTHOR: Isensee, A. R.; Sadeghi, A. M.
TITLE: Impact of tillage practice on runoff and pesticide transport
SOURCE: Journal of Soil & Water Conservation (ISSN:0022-4561) v 48 p 523-7 November/December '93
CONTAINS: bibliography; illustration(s)

9 BAI
YT(v.1- ) RA565 A1 B8 For SPECIFIC VOLUME status, check UNL Libraries atalog

AUTHOR: Miles, Carl J.; Leong, Gladys; Dollar, Steven
TITLE: Pesticides in marine sediments associated with golf course runoff
SOURCE: Bulletin of Environmental Contamination and Toxicology (ISSN: 0007-4861) v 49 p 179-85 August '92
CONTAINS: bibliography; illustration(s)

10 BAI
YT(v.1- ) RA565 A1 B8 For SPECIFIC VOLUME status, check UNL Libraries atalog

AUTHOR: Mayer, J. R.; Elkins, N. R.
TITLE: Potential for agricultural pesticide runoff to a Puget Sound estuary: Padilla Bay, Washington
SOURCE: Bulletin of Environmental Contamination and Toxicology (ISSN: 0007-4861) v 45 p 215-22 August '90
CONTAINS: bibliography; illustration(s); map

YT(v.1- ) TD180 For SPECIFIC VOLUME status, check UNL Libraries
atalog

③

AUTHOR: Felsot, Allan S.; Mitchell, J. Kent; Kenimer, Ann L.
TITLE: Assessment of management practices for reducing pesticide runoff from sloping cropland in Illinois
SOURCE: Journal of Environmental Quality (ISSN:0047-2425) v 19 p 539-45 July-September '90
CONTAINS: bibliography; illustration(s)

13 BAI
YT(v.1- ) S671 A46 For SPECIFIC VOLUME status, check UNL Libraries
atalog

AUTHOR: Kenimer, A. L.; Mostaghimi, S.; Dillaha, T. A.
TITLE: PLIERS: pesticide losses in erosion and runoff simulator
SOURCE: Transactions of the ASAE (ISSN:0001-2351) v 32 p 127-36 January/February '89
CONTAINS: bibliography; illustration(s)

14 BAI
YT(v.1- ) TD180 J7 For SPECIFIC VOLUME status, check UNL Libraries
atalog

AUTHOR: Haith, Douglas A.
TITLE: Simulated regional variations in pesticide runoff
SOURCE: Journal of Environmental Quality (ISSN:0047-2425) v 15 p 5-8 January-March '86
CONTAINS: bibliography; illustration(s)

15 BAI
YT(v.1- ) S671 A46 For SPECIFIC VOLUME status, check UNL Libraries
atalog

AUTHOR: Mills, W. C.; Leonard, R. A.
TITLE: Pesticide pollution probabilities
SOURCE: Transactions of the ASAE (ISSN:0001-2351) v 27 p 1704-10 November/December '84
CONTAINS: bibliography; illustration(s)

16 BAI
YT(v.1- ) S583 J6 For SPECIFIC VOLUME status, check UNL Libraries
atalog

AUTHOR: Willis, Guye H.; McDowell, Leslie L.; Murphree, Carl E.
TITLE: Pesticide concentrations and yields in runoff from silty soils in the lower Mississippi Valley
SOURCE: Journal of Agricultural and Food Chemistry (ISSN:0021-8561) v 31 p 1171-7 November/December '83
CONTAINS: bibliography; illustration(s)

4 BAI
YT(v.15- ) SD1 S63 For SPECIFIC VOLUME status, check UNL Libraries
atalog

AUTHOR: O'Laughlin, Jay; Belt, George H.
TITLE: Functional approaches to riparian buffer strip design
SOURCE: Journal of Forestry (ISSN:0022-1201) v 93 p 29-32 February '95
CONTAINS: bibliography; illustration(s)

④

```
5 BAI
CYT(v.1- )  TD180 J7  For SPECIFIC VOLUME status, check UNL Libraries
Catalog

   AUTHOR:  Haycock, N. E.; Pinay, G.
    TITLE:  Groundwater nitrate dynamics in grass and poplar vegetated
            riparian buffer strips during the winter
   SOURCE:  Journal of Environmental Quality (ISSN:0047-2425) v 22  p
            273-8 April-June '93
 CONTAINS:  bibliography; illustration(s)


6 BAI
BIOL(v.1- )  QH96 A1 F7  For SPECIFIC VOLUME status, check UNL Libraries
Catalog

   AUTHOR:  Osborne, Lewis L.; Kovacic, David A.
    TITLE:  Riparian vegetated buffer strips in water-quality
            restoration and stream management
   SOURCE:  Freshwater Biology (ISSN:0046-5070) v 29  p 243-58 April '93
 CONTAINS:  bibliography; illustration(s); map
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ntellectual property protection as dictated by the appropriate laws of your
ountry and/or by International Convention.

 S671. A45                  GeoRef Disc 4: 1/96-10/97                 1 of 2
                                                     Marked in Search: #15
I: Analysis of pesticide residues in surface and groundwater of a small
atershed.
U: Laroche-A-M; Gallichand-J
O: Transactions of the ASAE. 38; 6, Pages 1731-1736. 1995.
B: American Society of Agricultural Engineers. [St. Joseph, MI], United
tates. 1995.
Y: 1995
N: 97-57679

                            GeoRef Disc 4: 1/96-10/97                 2 of 2
                                                     Marked in Search: #15
I: Water erosion and water quality.
U: McCool-D-K; Renard-K-G
K: In: Dryland agriculture; strategies for sustainability.
A: Singh-R-P (editor); Parr-J-F (editor); Stewart-B-A (editor)
O: Advances in Soil Science. 13; Pages 175-185. 1990.
B: Springer-Verlag. New York-Berlin-Heidelberg. International. 1990.
Y: 1990
N: 97-57006
```

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ilverPlatter 3.11           Water Resources 1967-10/94

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ubscription and License Agreement and the applicable Copyright and
ntellectual property protection as dictated by the appropriate laws of your
ountry and/or by International Convention..

                              Water Resources 1967-10/94             1 of 17
                                                          Marked in Search: #3
N: W75-11214
I: DISSIPATION OF PHENOXY HERBICIDES APPLIED TO RIPARIAN VEGETATION.
U: SOPPER,-W.-E.
O: IN: PROCEEDINGS, RESEARCH PLANNING CONFERENCE ON INTEGRATED SYSTEMS OF
QUATIC PLANT CONTROL, OCTOBER 29-30, 1973, ARMY ENGINEER WATERWAYS EXPERIMENT
TATION, VICKSBURG, MISSISSIPPI, P E13-E16, AUGUST 1974.

                              Water Resources Abs. 1967-4/97         2 of 17
                                                          Marked in Search: #6
I: Nonpoint sources of pesticides in the San Joaquin River, California: Input
rom winter storms, 1992-93.
U: Domagalski,-J.L.
O: OPEN-FILE REPORTS SECTION, BOX 25286, MS 517, DENVER, CO 80225 (USA). U.S.
EOLOGICAL SURVEY, EARTH SCIENCE INFORMATION CENTER, 1995. 15 pp.
A: English
N: 3998572

                              Water Resources Abs. 1967-4/97         3 of 17
                                                          Marked in Search: #6
I: Prediction of surface water input of chloridazon and chlorpyrifos from an
gricultural watershed in Chile.
U: Barra,-R.; Vighi,-M.; Di-Guardo,-A.
O: CHEMOSPHERE 1995  vol. 30, no. 3, pp. 485-500
A: English
N: 3743768

                              Water Resources Abs. 1967-4/97         4 of 17
                                                          Marked in Search: #6
I: A fugacity model of pesticide runoff to surface water: Development and
alidation.
U: Di-Guardo,-A.; Calamari,-D.; Zanin,-G.; Consalter,-A.; Mackay,-D.
O: CHEMOSPHERE 1994  vol. 28, no. 3, pp. 511-531
A: English
N: 3591066

                              Water Resources Abs. 1967-4/97         5 of 17
                                                          Marked in Search: #6
```

AU: Leonard,-R.A.; Truman,-C.C.; Knisel,-W.G.; Davis,-F.M.
F: Symposium on the Role of Modeling in Regulatory Affairs, at Weed Science ociety of America Meeting, Louisville, KY (USA) 4 Feb 1991
O: WEED-TECHNOL. 1992 vol. 6, no. 3, pp. 725-730 ⑥
A: English
N: 3531643

Water Resources Abs. 1967-4/97 6 of 17
Marked in Search: #6
I: Assessment of Management Practices for Reducing Pesticide Runoff from loping Cropland in Illinois.
U: Kenimer,-A.L.; Mitchell,-J.K.; Felsot,-A.S.

O: Journal of Environmental Quality JEVQAA, Vol. 19, No. 3, p 539-545, uly/September 1990. 2 fig, 7 tab, 49 ref. North Central Regional Pesticide mpact Assessment Program Grant ILLU-12- 0214, University of Illinois Water esources Center Grant G1015-02, Southern Regional Research Project S-218.
N: 9101021

Water Resources Abs. 1967-4/97 7 of 17
Marked in Search: #6
I: Comparison of Agricultural Nonpoint Source Runoff from No-Till and onventional Till Vegetable Crop Test Plots.
U: McCall,-E.C.; Scott,-G.I.; Hurley,-J.M.
O: Available from National Technical Information Service, Springfield VA 22161 s PB90-173741/AS. Price codes: A04 in paper copy, A01 in microfiche. Water esources Research Institute, South Carolina, Clemson, Publication No. 126, arch 1988. 51p, 10 fig, 5 tab, 45 ref. USGS Contract 14-08-0001-G1251 and USGS roject G1251-07.
N: 9009550

Water Resources Abs. 1967-4/97 8 of 17
Marked in Search: #6
I: Effects of Conservation Tillage on Pesticide Loss with Water.
U: Wauchope,-R.D.
O: Effects of Conservation Tillage on Groundwater Quality: Nitrates and esticides. Lewis Publishers, Chelsea, Michigan 1987. p 205-215, 1 fig, 42 ref.
N: 8811079

Water Resources Abs. 1967-4/97 9 of 17
Marked in Search: #6
I: Effects of Conservation Tillage on Pesticide Loss with Water.
U: Wauchope,-R.D.
O: Effects of Conservation Tillage on Groundwater Quality: Nitrates and esticides. Lewis Publishers, Chelsea Michigan. 1987. p 205-215, 1 fig, 42 ref.
N: 8805771

✓ILL

Water Resources Abs. 1967-4/97 10 of 17
Marked in Search: #6
I: An Evaluation of Nonpoint Sources of Pesticide Pollution in Runoff.
U: Weber,-J.B.; Shea,-P.J.; Strek,-H.J.
O: Environmental Impact of Nonpoint Source Pollution 1980, p 69-98. 4 Tab, 51 ef. Ann Arbor Science Publishers Inc., Ann Arbor, Michigan. OWRT-B-122-NC(4).
N: 8101474

Water Resources Abs. 1967-4/97 11 of 17
Marked in Search: #6
I: Tillage System Effects on Runoff Water Quality: Pesticides.
U: Baker,-J.L.; Johnson,-H.P.
O: Paper No. 77-2504B presented at the 1977 Winter Meeting American Society of gricultural Engineers. December 13016, 1977 , Chicago, Illinois, 14 p, 2 fig, tab. 17 ref.

Water Resources 1967-10/94 12 of 17
Marked in Search: #6

N: W91-01021
I: Assessment of Management Practices for Reducing Pesticide Runoff from
loping Cropland in Illinois.
U: Felsot,-A.-S.; Mitchell,-J.-K.; Kenimer,-A.-L.
O: Journal of Environmental Quality JEVQAA, Vol. 19, No. 3, p 539-545,
uly/September 1990. 2 fig, 7 tab, 49 ref. North Central Regional Pesticide
mpact Assessment Program Grant ILLU-12-0214, University of Illinois Water
esources Center Grant G1015-02, Southern Regional Research Project S-218.

⑦

Water Resources 1967-10/94 13 of 17
Marked in Search: #6

N: W90-09550
I: Comparison of Agricultural Nonpoint Source Runoff from No-Till and
onventional Till Vegetable Crop Test Plots.
U: McCall,-E.-C.; Scott,-G.-I.; Hurley,-J.-M.
O: Available from National Technical Information Service, Springfield, VA
2161 as PB90-173741/AS. Price codes: A04 in paper copy, A01 in microfiche.
ater Resources Research Institute, South Carolina, Clemson, Publication No.
26, March 1988. 51p, 10 fig, 5 tab, 45 ref. USGS Contract 14-08-0001-G1251 and
SGS Project G1251-07.

Water Resources 1967-10/94 14 of 17
Marked in Search: #6

N: W88-11079
I: Effects of Conservation Tillage on Pesticide Loss with Water.
U: Wauchope,-R.-D.
O: IN: Effects of Conservation Tillage on Groundwater Quality: Nitrates and
esticides. Lewis Publishers, Chelsea, Michigan, 1987. p 205-215, 1 fig, 42
ef.

Water Resources 1967-10/94 15 of 17
Marked in Search: #6

N: W81-02965
I: Concentrations of Ethoprop in the Soil and Runoff Water of a Small
gricultural Watershed.
U: Rohde,-W.-A.; Asmussen,-L.-E.; Hauser,-E.-W.; Johnson,-A.-W.
O: Agricultural Research Results ARR-S-2, October, 1979. 14 p, 5 Fig, 4 Tab, 8
ef.

Water Resources 1967-10/94 16 of 17
Marked in Search: #6

N: W81-01474
: An Evaluation of Nonpoint Sources of Pesticide Pollution in Runoff.
U: Weber,-J.-B.; Shea,-P.-J.; Strek,-H.-J.
O: In: Environmental Impact of Nonpoint Source Pollution, 1980, p 69-98. 4
ab, 51 Ref. Ann Arbor Science Publishers Inc., Ann Arbor, Michigan.
WRT-B-122-NC(4).

/mail

Water Resources 1967-10/94 17 of 17
Marked in Search: #6

TD223. C69

N: W79-09201
I: Nutrient and Pesticide Movement from Field to Stream: A Field Study.
U: Baker,-J.-L.; Johnson,-H.-P.; Borcherding,-M.-A.; Payne,-W.-R.
O: In: Best Management Practices for Agriculture and Silviculture, Proceedings
f the 1978 Cornell Agricultural Waste Management Conference, p 213-245, 1979.
0 fig, 7 tab, 21 ref.

⑧

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ountry and/or by International Convention.

                                                                     1 of 3
                                                          Marked in Search: #7
U: Straskraba,-M.
I: Ecotechnological methods for managing non-point source pollution in
atersheds, lakes and reservoirs.
T: Water science and technology 0273-1223 ; v. 33, no. 4/5.
O: Diffuse pollution '95  selected proceedings of the 2nd IAWQ International
pecialized Conference and Symposia on Diffuse Pollution, held in Brno and
rague, Czech Republic, 13-18 August 1995 /. 1st ed. Oxford ; New York :
ergamon Press, 1996.. p. 73-80.
N: DNAL TD420.A1P7-v.33-no.4/5
A: English

                                                                     2 of 3
                                                          Marked in Search: #7
U: Raisin,-G.W.; Mitchell,-D.S.
I: The use of wetlands for the control of non-point source pollution.
O: Water-sci-technol. Kidlington, Oxford, UK : Elsevier Science Ltd. 1995. v.
2 (3) p. 177-186.
N: DNAL TD420.A1P7
A: English

                                                                     3 of 3
                                                          Marked in Search: #7
U: Panuska,-John-C.; Moore,-Ian-D. (Ian Donald)
A: University of Minnesota. Water Resources Research Center.
 Geological Survey (U.S.).
I: Water quality modeling : terrain analysis and the agricultural non-point
ource pollution (AGNPS) model.
T: Technical report (University of Minnesota. Water Resources Research Center)
 no. 132.
O: St. Paul, MN : Water Resources Research Center, University of Minnesota,
[1991] iii, 56 p. : ill.
N: DNAL TC424.M6T43--no.132
A: English
```

Riparian Reviews
→ Pesticide specific

3 BAI
NL does not own. Consider Interlibrary Loan.

AUTHOR: Kimbrough, Robert A.; Litke, David W.
TITLE: Pesticides in streams draining agricultural and urban areas in Colorado
SOURCE: Environmental Science & Technology (ISSN:0013-936X) v 30 p 908-16 March '96
CONTAINS: bibliography; maps

3 BAI
YT(v.1- ) TD180 J7 For SPECIFIC VOLUME status, check UNL Libraries atalog

AUTHOR: Clausen, J. C.; Jokela, W. E.; Potter, F. I.:III
TITLE: Paired watershed comparison of tillage effects on runoff, sediment, and pesticide losses
SOURCE: Journal of Environmental Quality (ISSN:0047-2425) v 25 p 1000-7 September/October '96
CONTAINS: bibliography; illustration(s); map

# APPENDIX F

Water Sampling Protocol and Sample Codes used on Laboratory Analytical Reports.

Water Samples Collected/Analysed: Mead Coop. P.t. (706)

| DATE | Sample Code | Time (min) |
|---|---|---|
| 5/15/98 | LFN-21 | 180 |
| | LFN-20LD1 | |
| | LFN-18 | 150 |
| | LFN-17 | |
| 3 bottles/30 min | LFN-14 | 120 |
| | LFN-13 | |
| | LFN-11 | 90 |
| | LFN-10 | |
| | LFN-8 | 60 |
| | LFN-7 | |
| | LFN-5 | 30 |
| | LFN-4 | |
| | LFN-2 | 0 |
| | LFN-1 | |
| 5/20/98 | LF-1 | 0 |
| | LF-2 | 30 |
| | LF-3 | 60 |
| 1 bottle/30 min | LF-4 | 90 |
| | LF-5 | 120 |
| | LF-6 | 150 |
| | LF-7FD1 | 180 |
| | LF-8 | 210 |
| | # | |
| | NLF-1 | 0 |
| | NLF-2 | |
| 3 bottles/30 min | NLF-4 | 30 |
| | NLF-5 | |
| | NLF-23 | 210 |

| DATE | Sample Code | Time (min) |
|---|---|---|
| 6/9/98 | 1 MEAD | 0 |
| | 2 MEAD | 30 |
| | 3 MEAD | 60 |
| | 4 MEAD | 90 |
| 1 bottle/30 min | 5 MEAD | 120 |
| | 6 MEAD | 150 |
| | 7 MEAD LD1 | 180 |
| | 8 MEAD | 210 |
| 11/10/98 | BFN 1 LD1 | 0 |
| | BFN 18 | 510 |
| 1 bottle/30 min | BFN 20 | 570 |
| | BFN 21 | 600 |
| | BFN 23 | 660 |
| | # | |
| | SFN 1 | 0 |
| | SFN 4 | 30 |
| 3 bottles/30 min | SFN 7 | 60 |
| | SFN 10 | 90 |
| | SFN 13 | 120 |
| | SFN 16 | 150 |
| | SFN 19 | 180 |
| | SFN 22 | 210 |

| Date | Sample Code | Time (min) |
|---|---|---|
| 9/23/97 | Large Flume | 0 |
|  | #1 SM FLUME NORTH | 0 |
| 10/31/97 | SLF 1 | 0 |
|  | SLF 4 | 30 |
| # | SLF 7LDI | 60 |
|  | NSF 1 | 0 |
|  | NSF 4 | 30 |
| 3 bottles/30 min | NSF 7 | 60 |
|  | NSF 10 | 90 |
|  | NSF 13 | 120 |
|  | NSF 16 | 150 |
|  | NSF 19 | 180 |
|  | NSF 22 | 210 |
| 11/19/97 | SF21 LDI (North) | 0 |

|  |  | Sample ID's |
|---|---|---|
| Large Plume | (large watershed) | LFN, LF, BFN, LARGE FLUME |
| Small Plume North | (medium watershed) | NLF, SFN, MEAD, SF |
| Small Plume South | (small watershed | SLF |

LDI is lab gibberish

# Auto Sampler Operation

| Bottle No | Sampling Time | |
|---|---|---|
| | 3 bottles/time | 1 bottle/time |
| 1 | 0 | 0 |
| 2 | | 30 |
| 3 | | 60 |
| 4 | 30 | 90 |
| 5 | | 120 |
| 6 | | 150 |
| 7 | 60 | 180 |
| 8 | | 210 |
| 9 | | 240 |
| 10 | 90 | 270 |
| 11 | | 300 |
| 12 | | 330 |
| 13 | 120 | 360 |
| 14 | | 390 |
| 15 | | 420 |
| 16 | 150 | 450 |
| 17 | | 480 |
| 18 | | 510 |
| 19 | 180 | 540 |
| 20 | | 570 |
| 21 | | 600 |
| 22 | 210 | 630 |
| 23 | | 660 |
| 24 | | 690 |

Numbers in the Sample Code indicate bottle location (number) in the ISCO tray.
A break in numbering sequence indicates enough water present to trip ISCO to sample, but not enough water to sample, then later, there becomes enough to sample again.

# APPENDIX G

Laboratory Analytical Results: Laboratory Analytical Reports, Tabulations, and Graphs of Some Results.

Medium Watershed

Table 1. Pesticide concentrations (μg/L) in Mead, 6/9/98 runoff event.

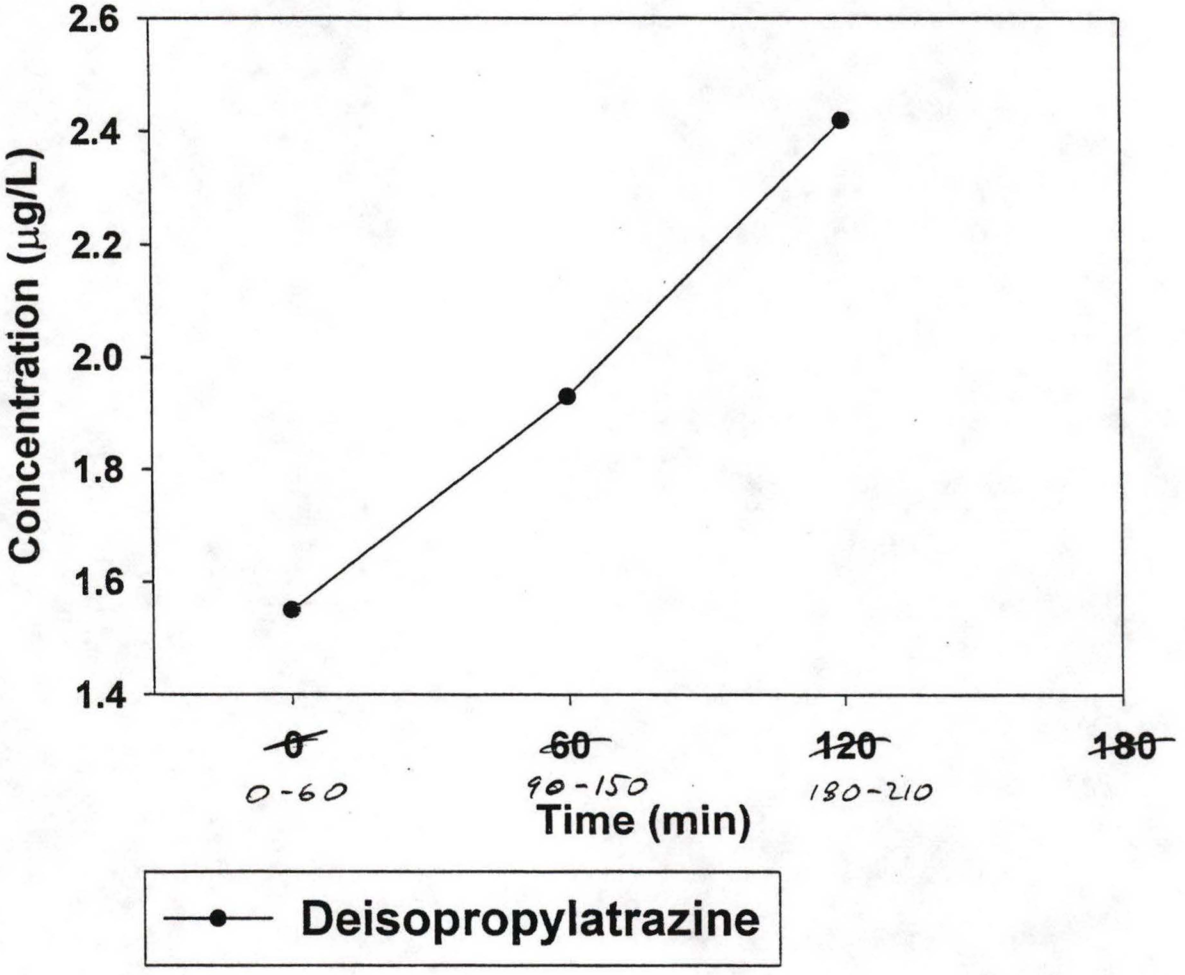
| **Pesticide** | **Time (min)** | | |
|---|---|---|---|
| | 0-60<br>[illegible] | 90-150<br>~~60~~ | 180-210<br>~~120~~ |
| Deisopropylatrazine | 1.55 | 1.93 | 2.42 |
| Deethylatrazine | 7.67 | 3.89 | 5.10 |
| Atrazine | 17.46 | 14.10 | 12.40 |
| Alachlor | 1.91 | 0.91 | 0.80 |
| Metolachlor | 10.66 | 8.03 | 8.24 |

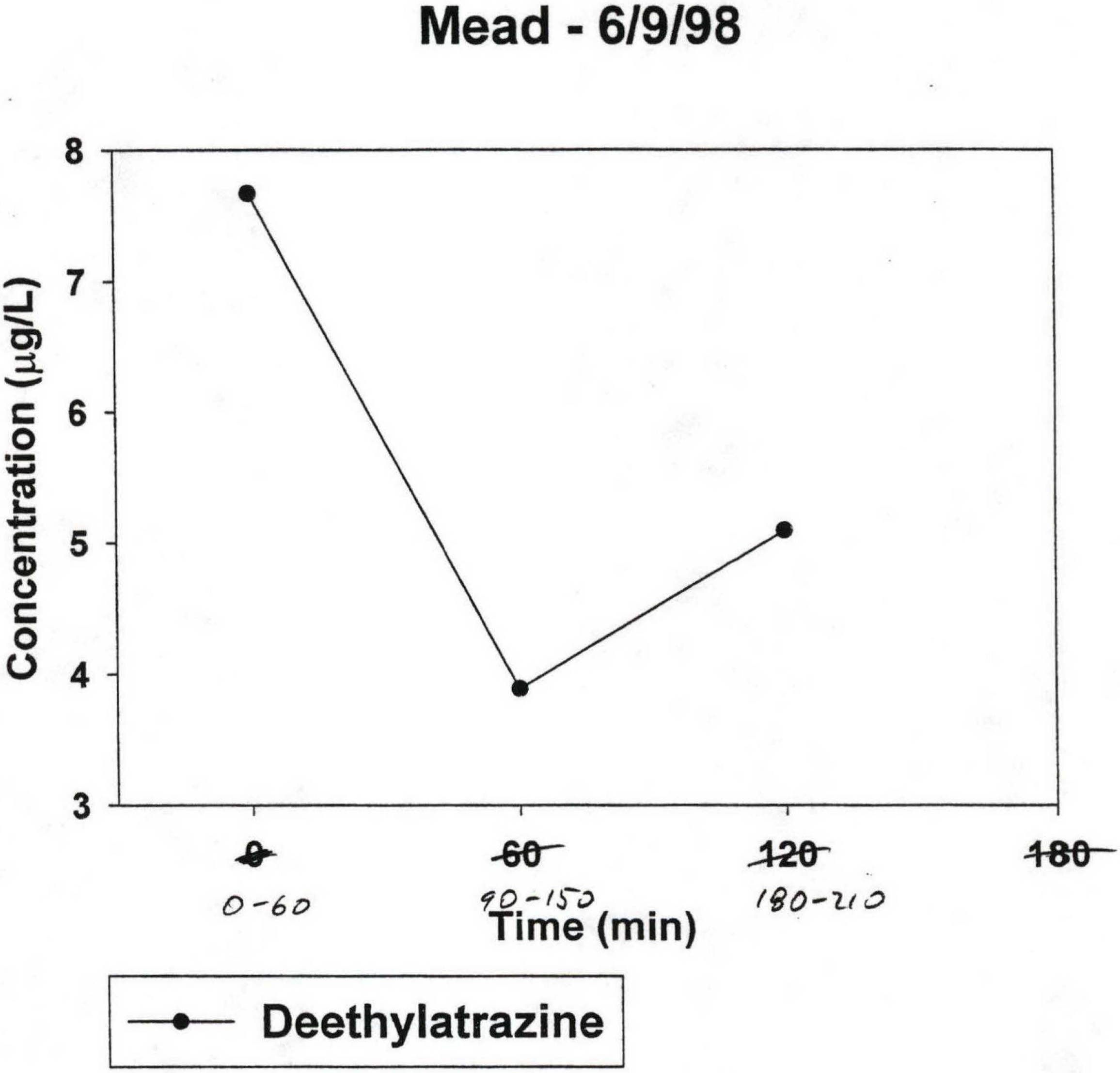
Avg of sample times 180 and 210 min

Avg of sample times 90, 120 and 150 min

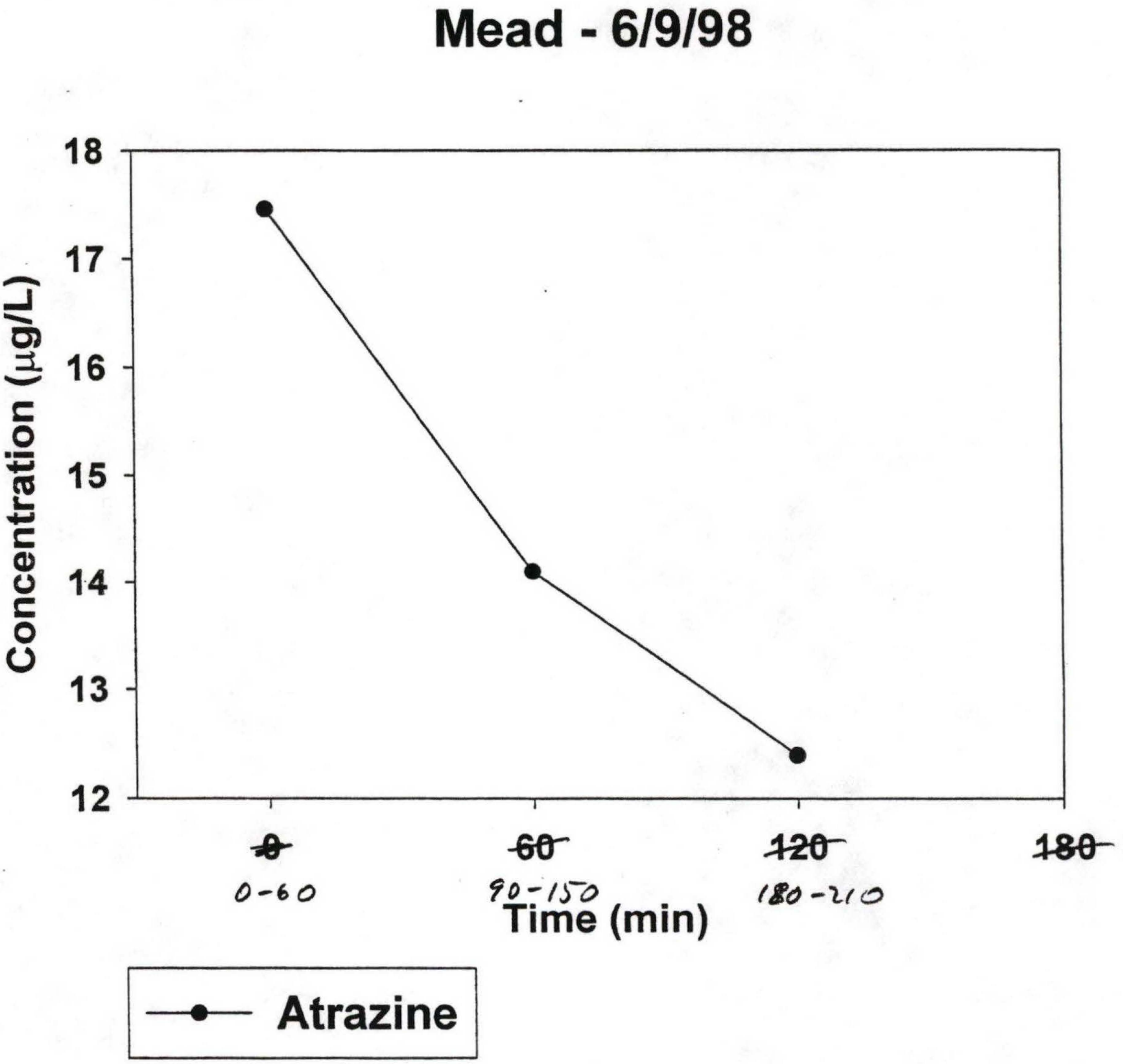
Avg of sample times 0, 30 and 60 min

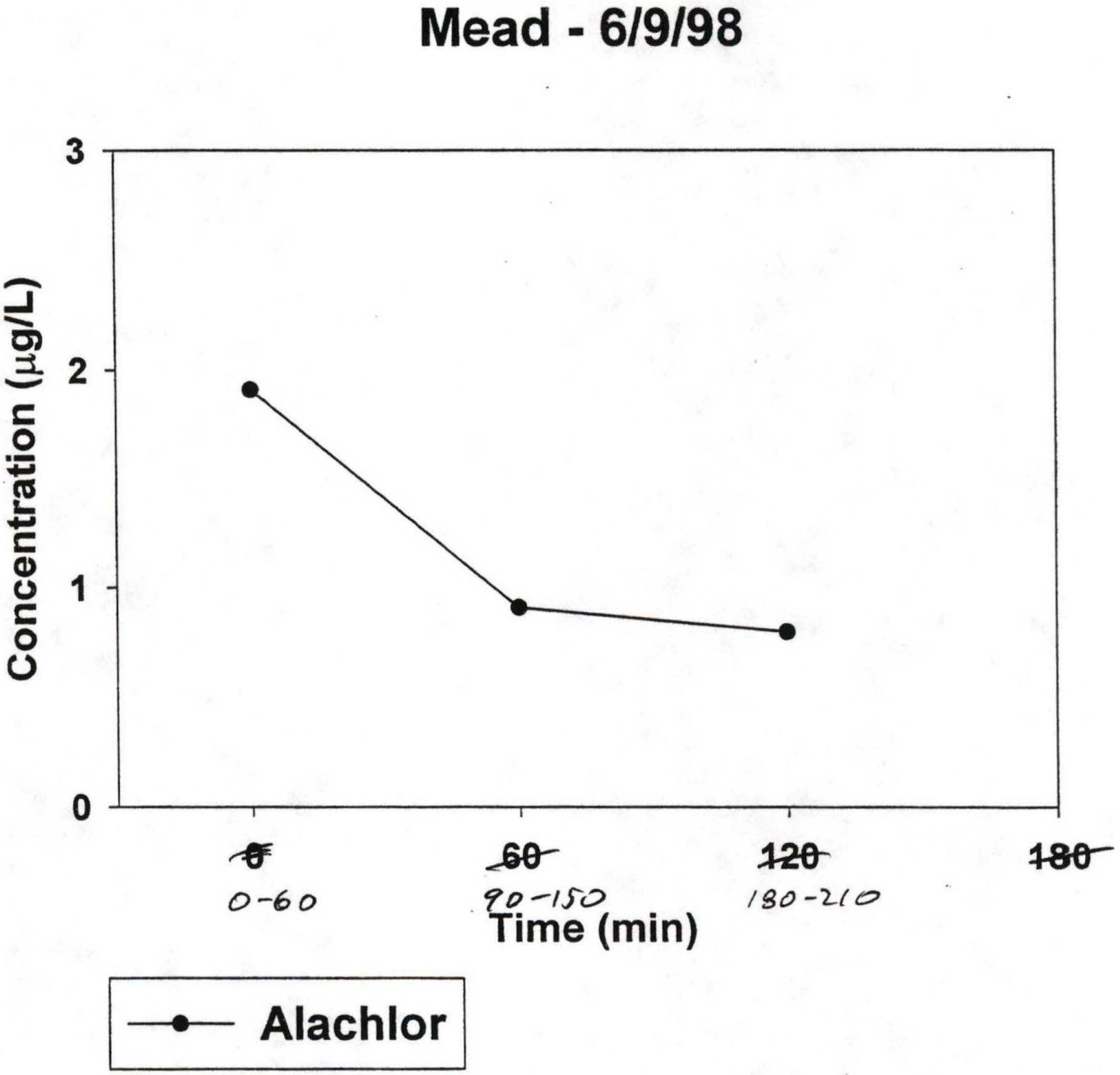
**Mead - 6/9/98**


2.6
2.4
2.2
2.0
1.8
1.6
1.4
Concentration (μg/L)
~~0~~
~~60~~
~~120~~
~~180~~
0-60
90-150
180-210
Time (min)
Deisopropylatrazine



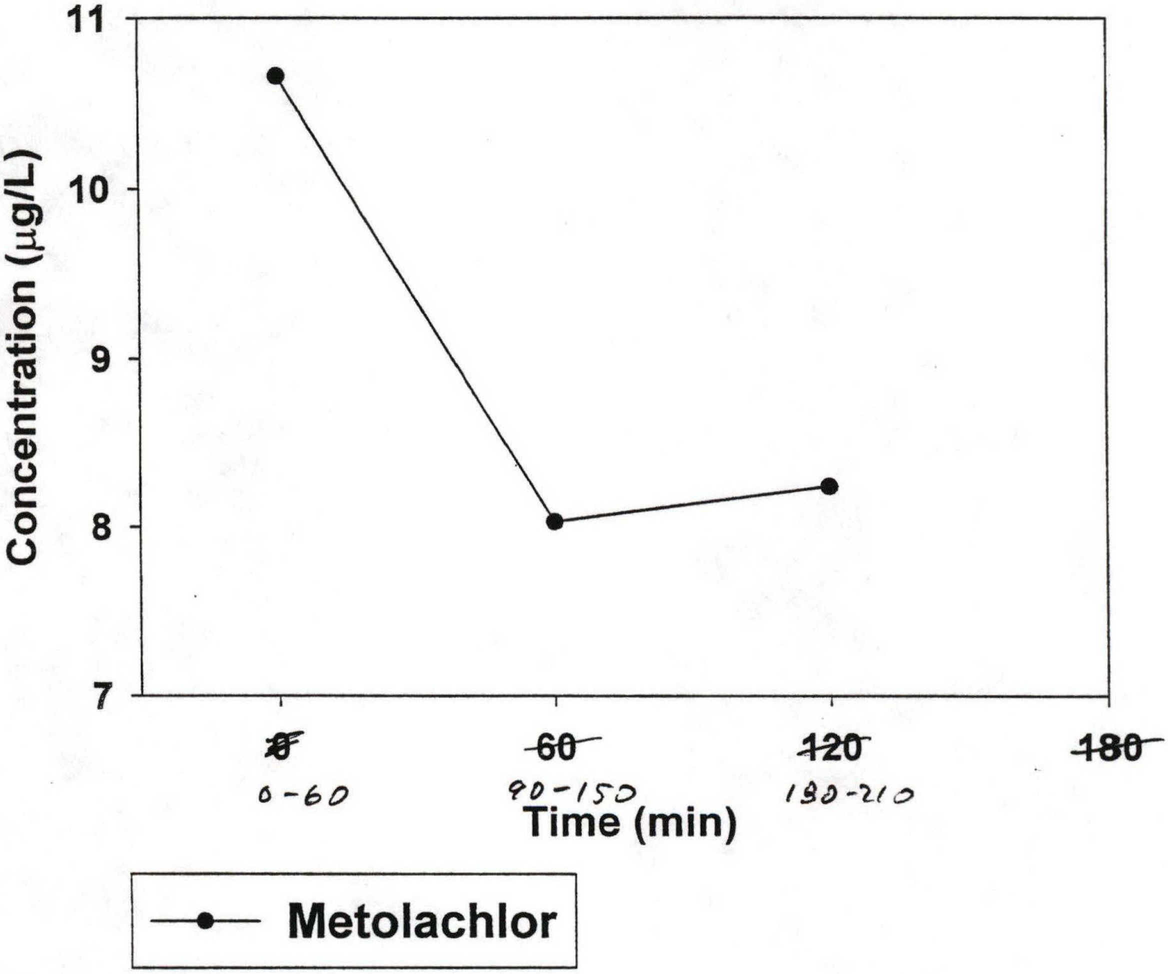
Mead - 6/9/98
8
7
6
5
4
3
Concentration (μg/L)
~~0~~
~~60~~
~~120~~
~~180~~
0-60
90-150
180-210
Time (min)
Deethylatrazine

Mead - 6/9/98
18
17
16
15
14
13
12
Concentration (μg/L)
~~0~~
0-60
~~60~~
90-150
~~120~~
180-210
~~180~~
Time (min)
Atrazine

 
Mead - 6/9/98

Concentration (μg/L)
3
2
1
0
~~0~~
0-60
~~60~~
90-150
~~120~~
180-210
~~180~~
Time (min)
Alachlor

# Mead - 6/9/98



Concentration (μg/L)
11
10
9
8
7
~~0~~
0-60
~~60~~
90-150
~~120~~
180-210
~~180~~
Time (min)
Metolachlor

# Water Sciences Laboratory - Analytical Report

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **1 MEAD**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

| | |
|---|---|
| Laboratory ID# | 98-1008 |
| Project: | HOAGLAND |
| Collection Date: | 6/ 9/98 |
| Sampled By: | KF |
| Received: | 6/ 9/98 |
| Batch# | W98065 |
| Analyzed: | 8/26/98 |
| Method: | RUNOFF.003<br>NE Pesticide Scan - Runoff |

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 1.46 | 0.50 |
| Deethylatrazine* | 2.38 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | 15.90 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | <0.20 | 0.20 |
| Metribuzin | 0.73 | 0.20 |
| Acetachlor | 0.32 | 0.20 |
| Alachlor | 2.24 | 0.20 |
| Cyanazine | 0.94 | 0.50 |
| Metolachlor | 11.35 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 9/15/98

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **2 MEAD**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-1009
Project: HOAGLAND
Collection Date: 6/ 9/98
Sampled By: KF
Received: 6/ 9/98
Batch# W98065
Analyzed: 8/26/98
Method: RUNOFF.003 NE Pesticide Scan - Runoff

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## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 1.50 | 0.50 |
| Deethylatrazine* | 2.45 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | 17.15 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | <0.20 | 0.20 |
| Metribuzin | 0.64 | 0.20 |
| Acetachlor | 0.32 | 0.20 |
| Alachlor | 1.94 | 0.20 |
| Cyanazine | 0.78 | 0.50 |
| Metolachlor | 10.70 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 9/15/98

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **3 MEAD**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-1010
Project: HOAGLAND
Collection Date: 6/ 9/98
Sampled By: KF
Received: 6/ 9/98
Batch# W98065
Analyzed: 8/26/98
Method: RUNOFF.003
NE Pesticide Scan - Runoff

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**** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 1.70 | 0.50 |
| Deethylatrazine* | 2.84 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | 0.23 | 0.20 |
| Atrazine | 19.33 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | 0.26 | 0.20 |
| Metribuzin | 0.59 | 0.20 |
| Acetachlor | 0.34 | 0.20 |
| Alachlor | 1.54 | 0.20 |
| Cyanazine | 0.83 | 0.50 |
| Metolachlor | 9.92 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 9/15/98

Daniel D. Snow, Laboratory Manager

# Water Sciences Laboratory - Analytical Report

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **4 MEAD**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-1011
Project: HOAGLAND
Collection Date: 6/ 9/98
Sampled By: KF
Received: 6/ 9/98
Batch# W98065
Analyzed: 8/26/98
Method: RUNOFF.003
NE Pesticide Scan - Runoff

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 1.68 | 0.50 |
| Deethylatrazine* | 3.18 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | 0.22 | 0.20 |
| Atrazine | 16.64 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | <0.20 | 0.20 |
| Metribuzin | 0.46 | 0.20 |
| Acetachlor | 0.25 | 0.20 |
| Alachlor | 1.08 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | 8.24 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 9/15/98

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **5 MEAD**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-1012
Project: HOAGLAND
Collection Date: 6/ 9/98
Sampled By: KF
Received: 6/ 9/98
Batch# W98065
Analyzed: 8/26/98
Method: RUNOFF.003
NE Pesticide Scan - Runoff

---

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 1.89 | 0.50 |
| Deethylatrazine* | 3.79 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | 14.28 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | <0.20 | 0.20 |
| Metribuzin | 0.41 | 0.20 |
| Acetachlor | 0.21 | 0.20 |
| Alachlor | 0.91 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | 7.82 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 9/15/98

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **6 MEAD**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-1013
Project: HOAGLAND
Collection Date: 6/ 9/98
Sampled By: KF
Received: 6/ 9/98
Batch# W98065
Analyzed: 8/26/98
Method: RUNOFF.003
NE Pesticide Scan - Runoff

---

## **** *Results of Analysis* ****

| Analysis | (μg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 2.22 | 0.50 |
| Deethylatrazine* | 4.70 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | 11.37 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | <0.20 | 0.20 |
| Metribuzin | 0.35 | 0.20 |
| Acetachlor | <0.20 | 0.20 |
| Alachlor | 0.73 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | 8.04 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 9/15/98

Daniel D. Snow, Laboratory Manager

# Water Sciences Laboratory - Analytical Report

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **7 MEAD LD1**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-1014
Project: HOAGLAND
Collection Date: 6/ 9/98
Sampled By: KF
Received: 6/ 9/98
Batch# W98065
Analyzed: 8/26/98
Method: RUNOFF.003
NE Pesticide Scan - Runoff

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 2.30 | 0.50 |
| Deethylatrazine* | 4.94 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | 12.38 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | <0.20 | 0.20 |
| Metribuzin | 0.37 | 0.20 |
| Acetachlor | <0.20 | 0.20 |
| Alachlor | 0.80 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | 8.15 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 9/15/98

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **8 MEAD**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-1016
Project: HOAGLAND
Collection Date: 6/ 9/98
Sampled By: KF
Received: 6/ 9/98
Batch# W98065
Analyzed: 8/26/98
Method: RUNOFF.003
NE Pesticide Scan - Runoff

---

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 2.54 | 0.50 |
| Deethylatrazine* | 5.25 | 0.20 |
| Trifluralin | 0.25 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | 12.42 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | 0.26 | 0.20 |
| Metribuzin | 0.42 | 0.20 |
| Acetachlor | 0.27 | 0.20 |
| Alachlor | 0.80 | 0.20 |
| Cyanazine | 0.56 | 0.50 |
| Metolachlor | 8.33 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 9/15/98

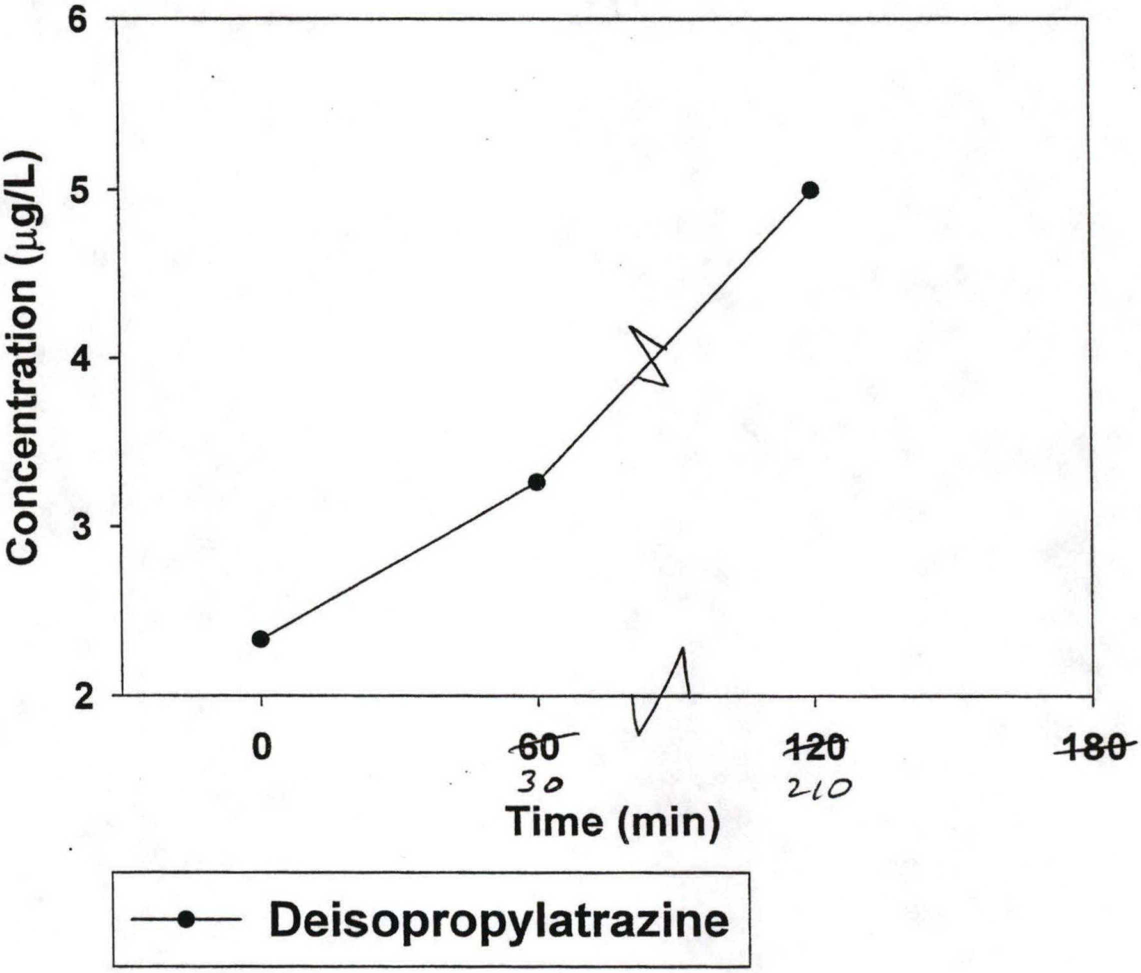
Daniel D. Snow, Laboratory Manager

Medium Watershed

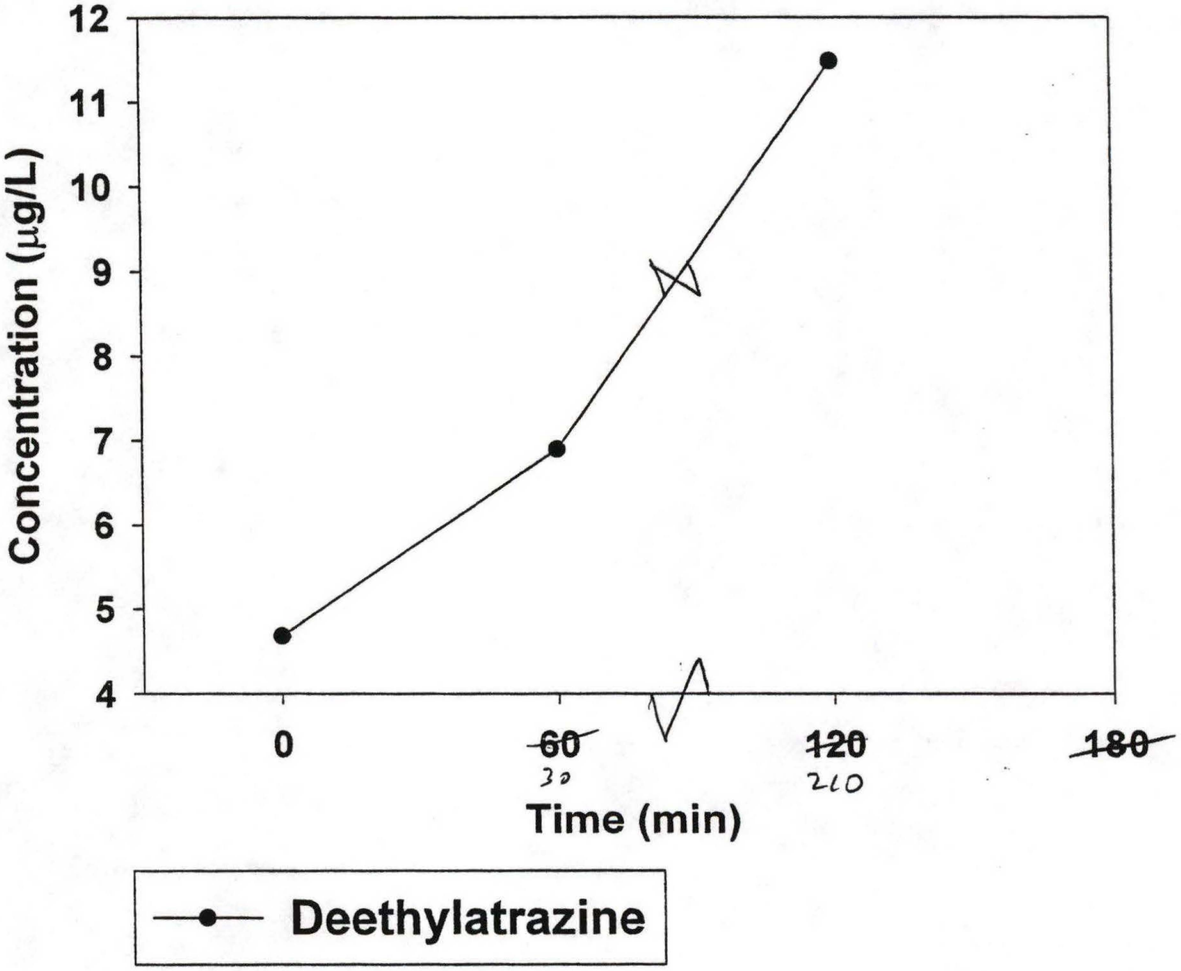
Table 3. Pesticide concentrations (µg/L) in NLF, 5/20/98 runoff event.

| Pesticide | Time (min) | | |
|---|---|---|---|
| | 0 | 30 ~~60~~ | 210 ~~120~~ |
| Deisopropylatrazine | 2.33 | 3.26 | 5.00 |
| Deethylatrazine | 4.68 | 6.90 | 11.49 |
| Atrazine | 25.71 | 44.01 | 95.61 |
| Metribuzin | 2.41 | 3.39 | 7.79 |
| Alachlor | 34.65 | 52.84 | 53.18 |
| Metolachlor | 0.89 | 1.12 | 6.32 |

## NLF - 5/20/98

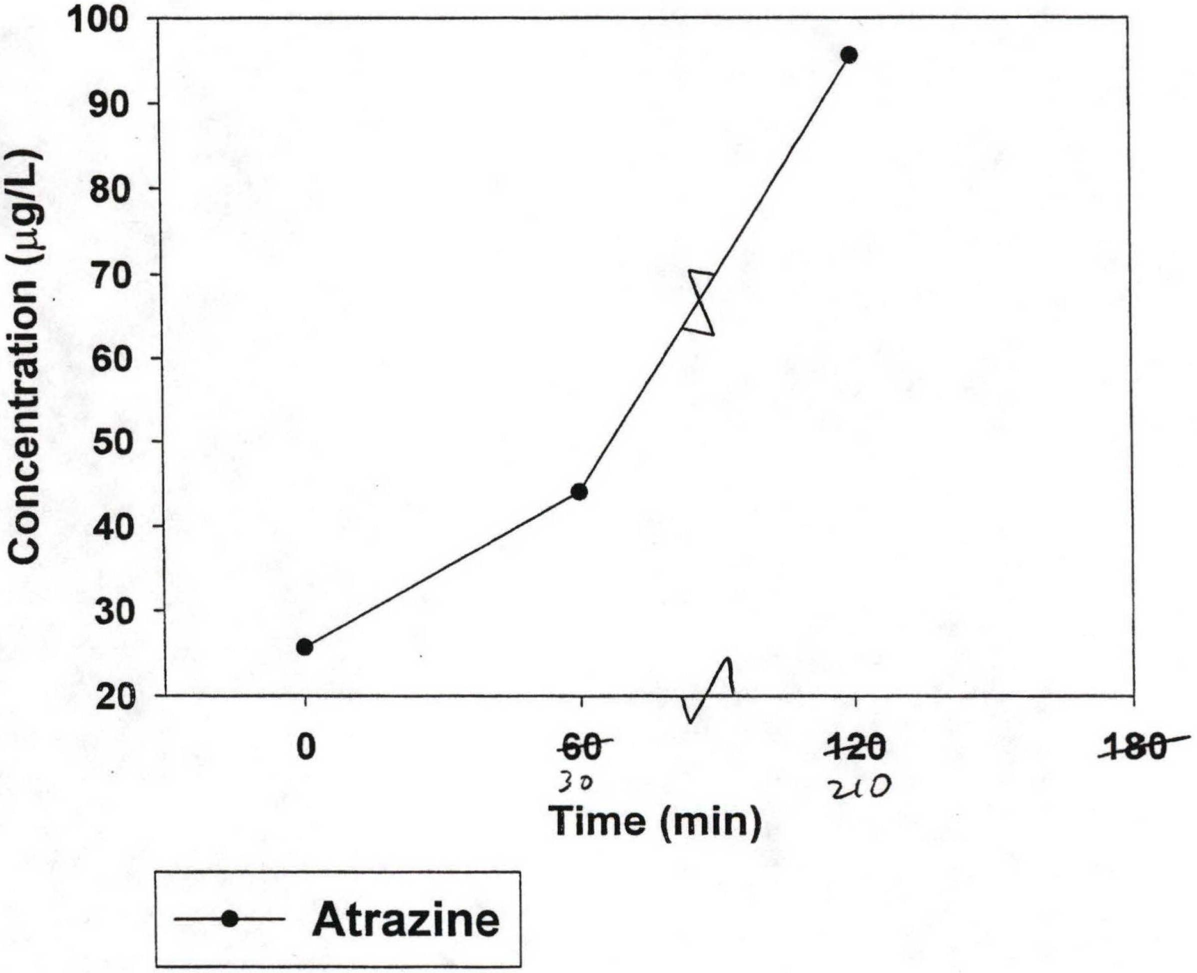

Concentration (μg/L)
6
5
4
3
2
0
~~60~~
30
~~120~~
210
~~180~~
Time (min)
Deisopropylatrazine

## NLF - 5/20/98



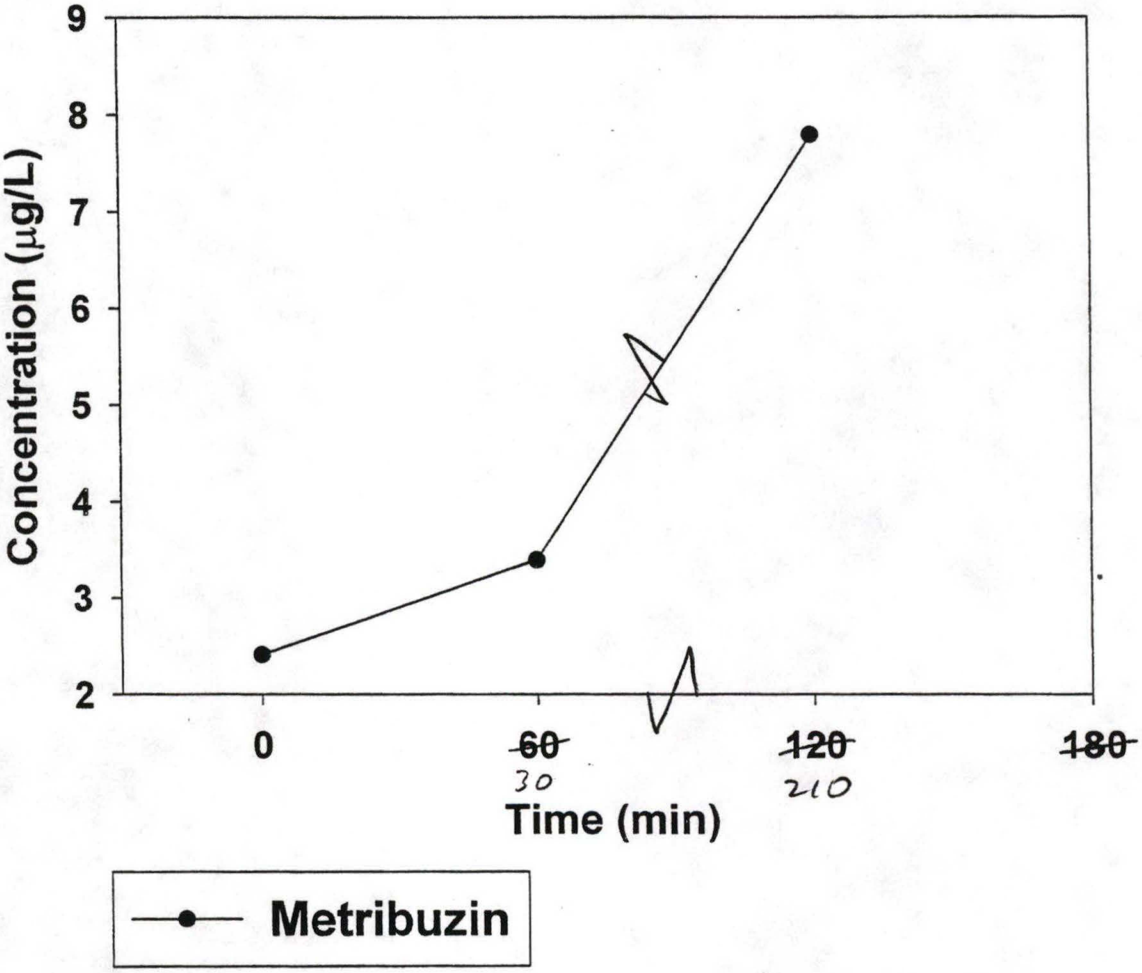
Concentration (μg/L)
12
11
10
9
8
7
6
5
4
0
~~60~~
30
~~120~~
210
~~180~~
Time (min)
Deethylatrazine

# NLF - 5/20/98

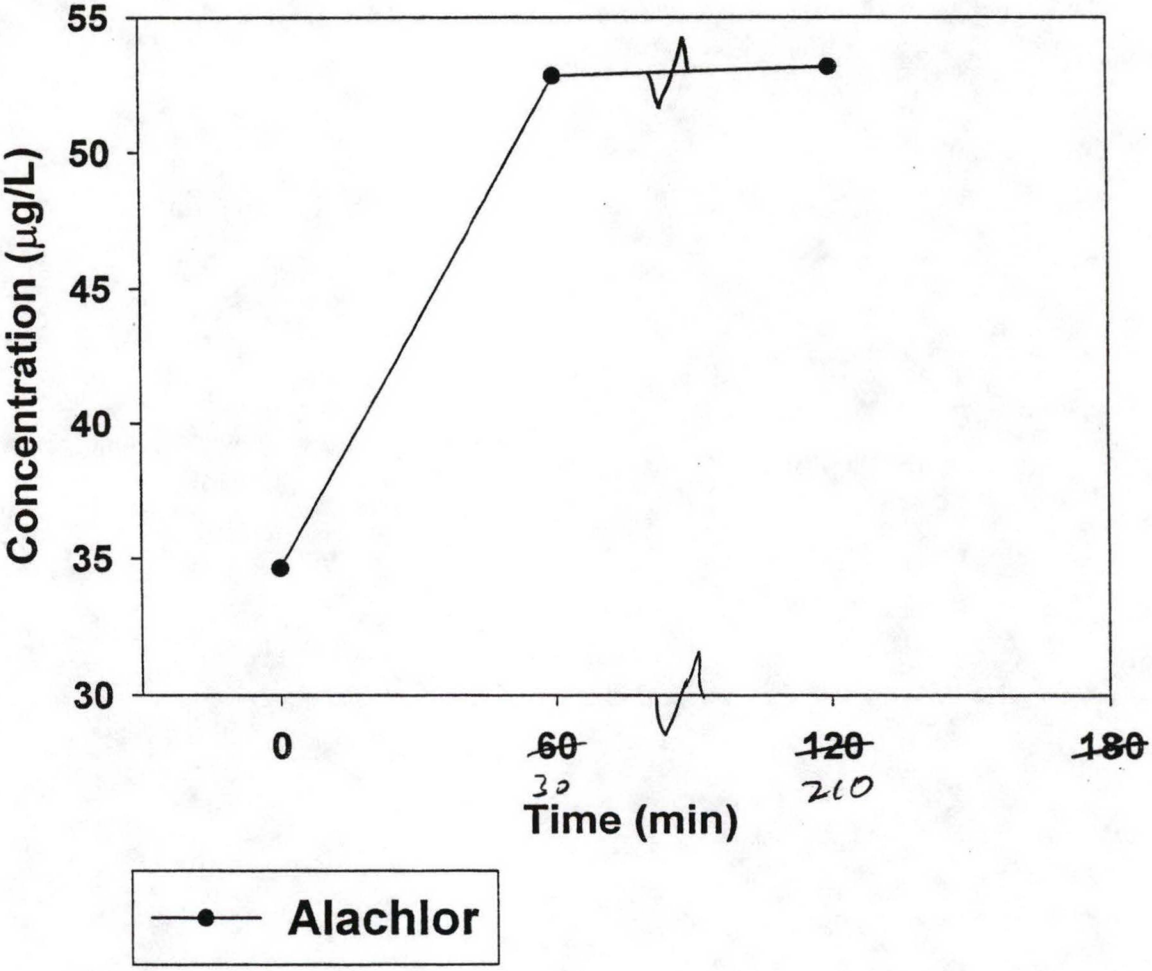


100
90
80
70
60
50
40
30
20
Concentration (μg/L)
0
~~60~~
30
~~120~~
210
~~180~~
Time (min)
Atrazine

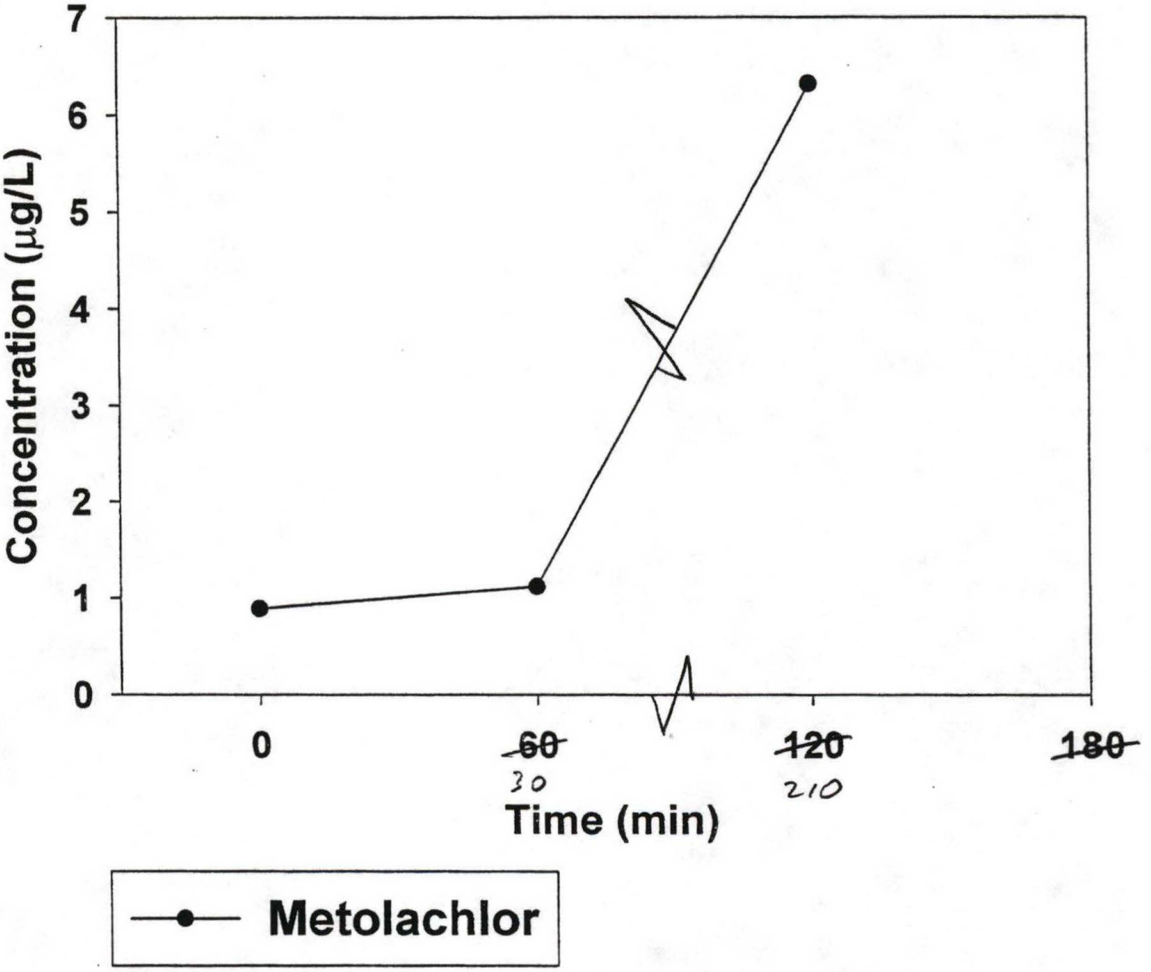
NLF - 5/20/98


Concentration (μg/L)
9
8
7
6
5
4
3
2
0
~~60~~
30
~~120~~
210
~~180~~
Time (min)
Metribuzin

**NLF - 5/20/98**


55
50
45
40
35
30
Concentration (µg/L)
0
~~60~~
30
~~120~~
210
~~180~~
Time (min)
Alachlor

## NLF - 5/20/98


Concentration (µg/L)
0
1
2
3
4
5
6
7
0
~~60~~
30
~~120~~
210
~~180~~
Time (min)
Metolachlor

Time Int. = 30 mi

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **NLF-1** (North Little Flume)

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-895
Project: HOAGLAND
Collection Date: 5/20/98
Sampled By: KF
Received: 5/20/98
Batch# W98057
Analyzed: 9/ 4/98
Method: RUNOFF.003
NE Pesticide Scan - Runoff

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 2.15 | 0.50 |
| Deethylatrazine* | 4.40 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | 23.62 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | 0.21 | 0.20 |
| Metribuzin | 2.41 | 0.20 |
| Acetachlor | 0.42 | 0.20 |
| Alachlor | 31.81 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | 0.82 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 9/15/98

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **NLF-2**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-896
Project: HOAGLAND
Collection Date: 5/20/98
Sampled By: KF
Received: 5/20/98
Batch# W98057
Analyzed: 9/ 4/98
Method: RUNOFF.003
NE Pesticide Scan - Runoff

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 2.50 | 0.50 |
| Deethylatrazine* | 4.96 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | 27.79 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | 0.28 | 0.20 |
| Metribuzin | 2.41 | 0.20 |
| Acetachlor | 0.34 | 0.20 |
| Alachlor | 37.48 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | 0.96 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 9/15/98

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **NLF-4**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-897
Project: HOAGLAND
Collection Date: 5/20/98
Sampled By: KF
Received: 5/20/98
Batch# W98057
Analyzed: 9/ 4/98
Method: RUNOFF.003
NE Pesticide Scan - Runoff

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 3.14 | 0.50 |
| Deethylatrazine* | 6.53 | 0.20 |
| Trifluralin | 0.33 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | 41.12 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | 0.40 | 0.20 |
| Metribuzin | 3.16 | 0.20 |
| Acetachlor | 0.41 | 0.20 |
| Alachlor | 52.77 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | 1.02 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 9/15/98

Daniel D. Snow, Laboratory Manager

Sample ID# **NLF-5**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-898
Project: HOAGLAND
Collection Date: 5/20/98
Sampled By: KF
Received: 5/20/98
Batch# W98057
Analyzed: 9/ 4/98
Method: RUNOFF.003
NE Pesticide Scan - Runoff

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 3.38 | 0.50 |
| Deethylatrazine* | 7.26 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | 46.89 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | 0.42 | 0.20 |
| Metribuzin | 3.62 | 0.20 |
| Acetachlor | 0.39 | 0.20 |
| Alachlor | 52.90 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | 1.22 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 9/15/98

Daniel D. Snow, Laboratory Manager

# Water Sciences Laboratory - Analytical Report

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **NLF-23**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-894
Project: HOAGLAND
Collection Date: 5/20/98
Sampled By: KF
Received: 5/20/98
Batch# W98057
Analyzed: 9/ 4/98
Method: RUNOFF.003
NE Pesticide Scan - Runoff

---

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 5.00 | 0.50 |
| Deethylatrazine* | 11.49 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | 0.50 | 0.20 |
| Atrazine | 95.61 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | 0.70 | 0.20 |
| Metribuzin | 7.79 | 0.20 |
| Acetachlor | 0.55 | 0.20 |
| Alachlor | 53.18 | 0.20 |
| Cyanazine | 0.77 | 0.50 |
| Metolachlor | 6.32 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 9/15/98

Daniel D. Snow, Laboratory Manager

Large Watershed

Table 2. Pesticide concentrations (μg/L) in LF, 5/20/98 runoff event.

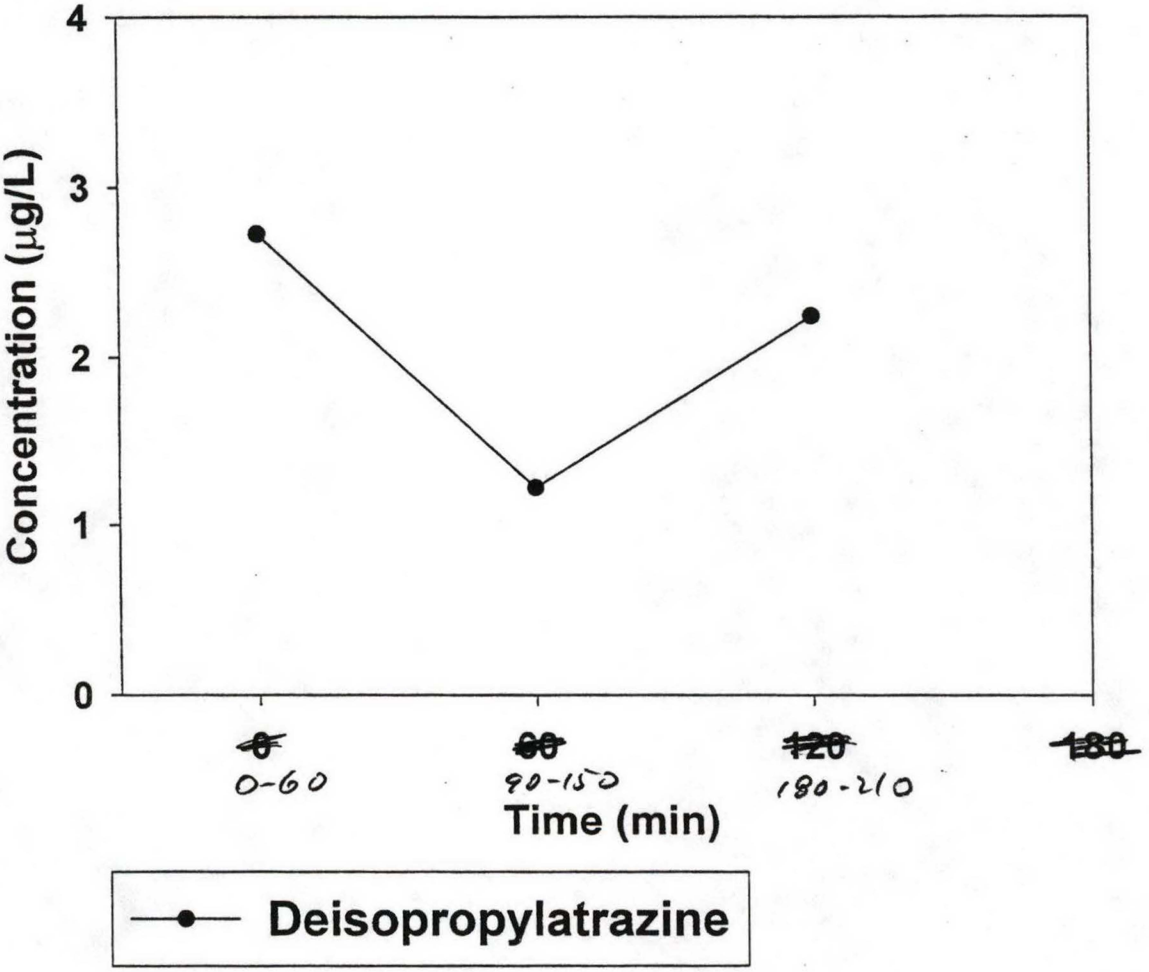
| **Pesticide** | **Time (min)** | | |
|---|---|---|---|
| | 0-60 ~~0~~ | 90-150 ~~60~~ | 180-210 ~~120~~ |
| Deisopropylatrazine | 2.73 | 1.22 | 2.25 |
| Deethylatrazine | 7.56 | 3.65 | 7.00 |
| Atrazine | 85.47 | 45.95 | 93.28 |
| Metolachlor | 66.74 | 38.93 | 74.35 |

avg of sample times 180 and 210 min

avg of sample times 90, 120, and 150 min

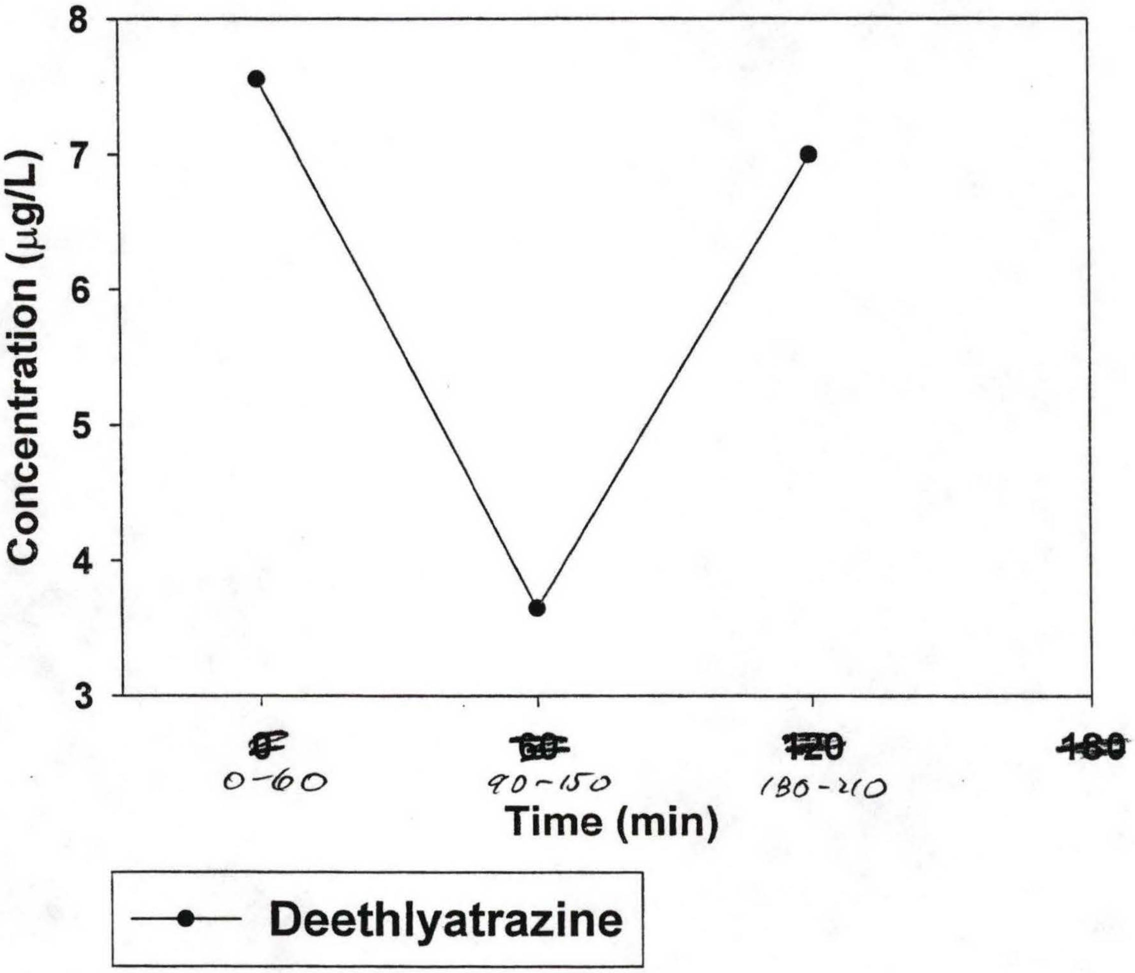
avg of sample times 0, 30 and 60 min

# LF - 5/20/98



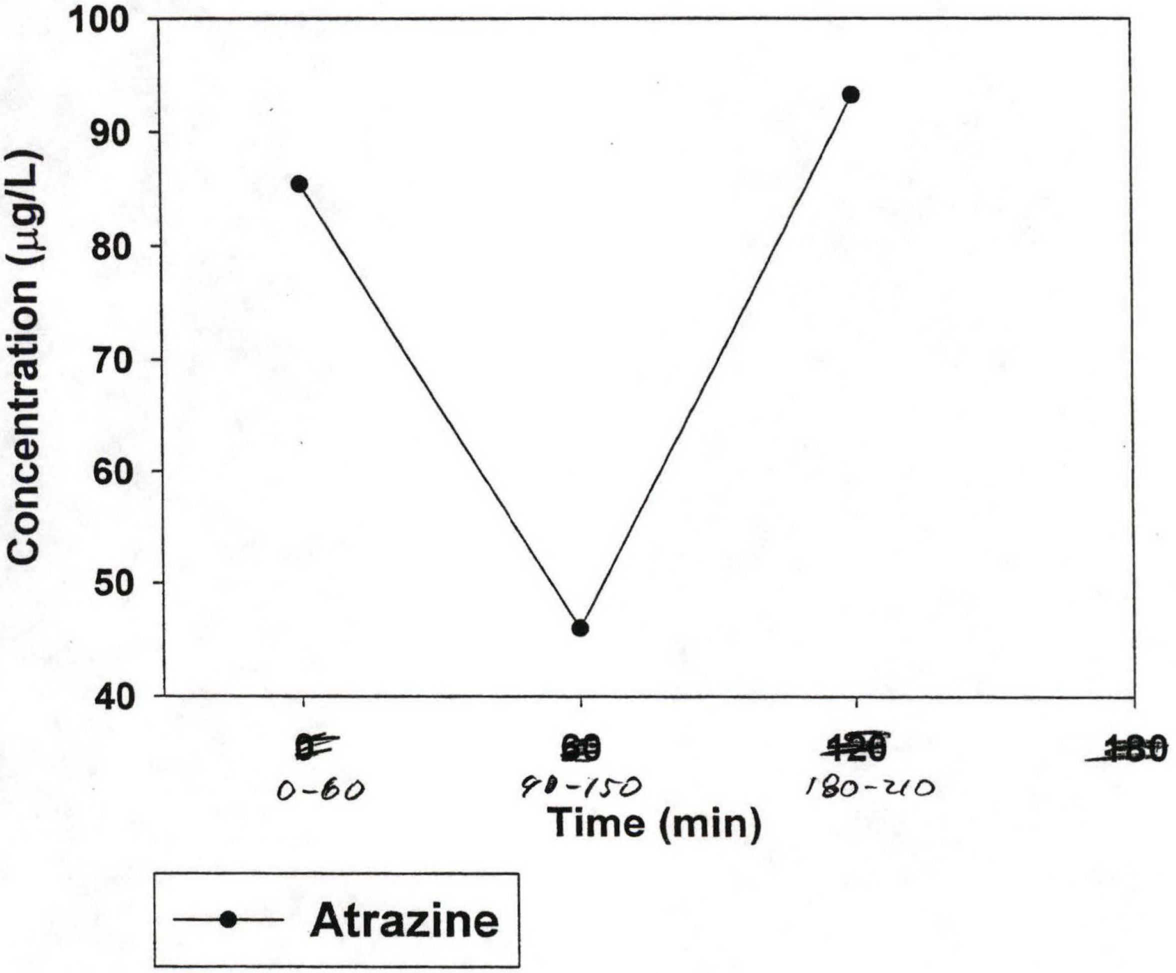
4
3
2
1
0
Concentration (µg/L)
~~0~~
0-60
~~60~~
90-150
~~120~~
180-210
~~180~~
Time (min)
Deisopropylatrazine

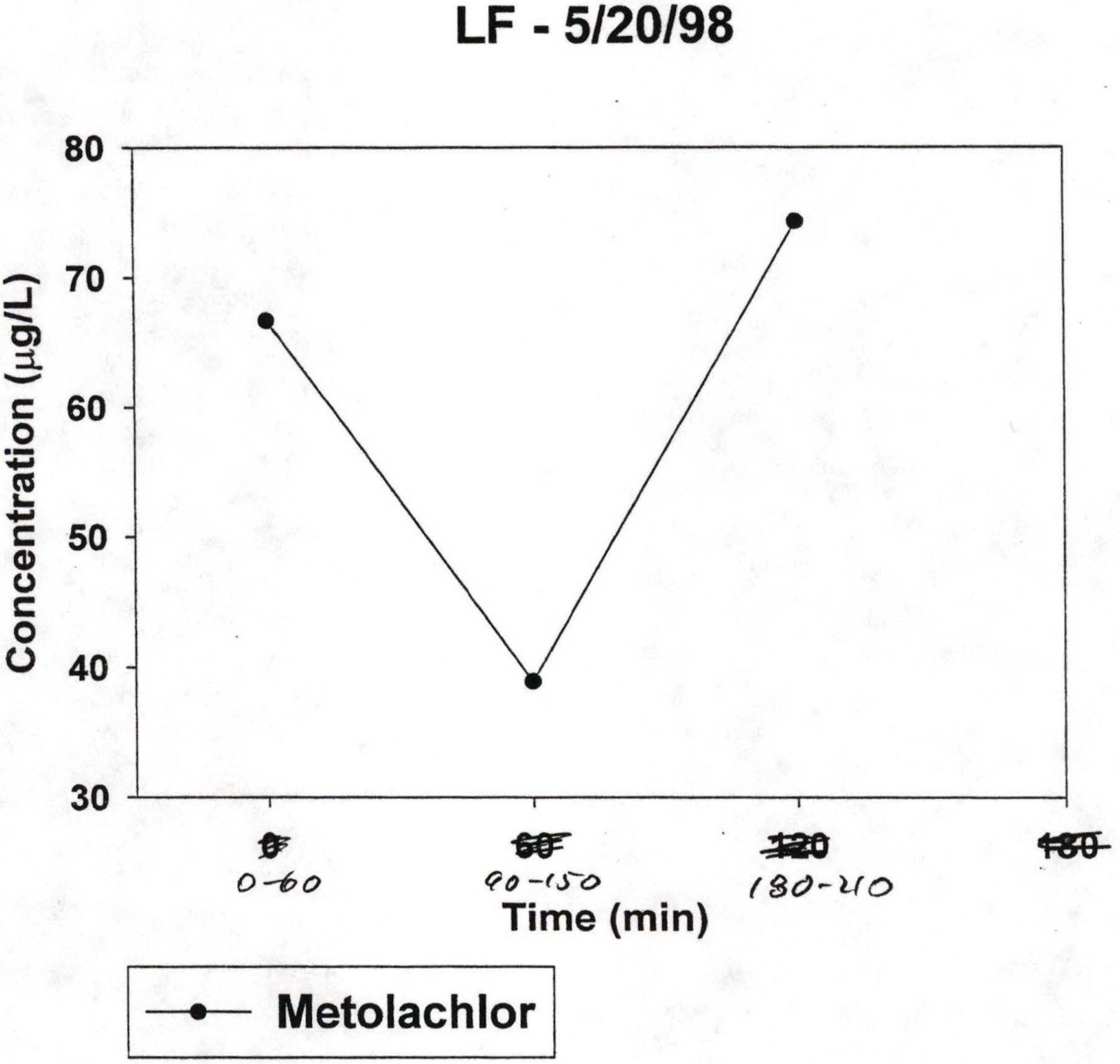
## LF - 5/20/98



8
7
6
5
4
3
Concentration (μg/L)
~~0~~
0-60
~~60~~
90-150
~~120~~
180-210
~~180~~
Time (min)
Deethlyatrazine

# LF - 5/20/98


100
90
80
70
60
50
40
Concentration (µg/L)
~~0~~
~~60~~
~~120~~
~~180~~
0-60
90-150
180-210
Time (min)
Atrazine


LF - 5/20/98
Concentration (μg/L)
80
70
60
50
40
30
~~0~~
0-60
~~60~~
90-150
~~120~~
180-240
~~180~~
Time (min)
Metolachlor

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **LF-1** (Large Flume)

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-884
Project: HOAGLAND
Collection Date: 5/20/98
Sampled By: KF
Received: 5/20/98
Batch# W98057
Analyzed: 9/ 4/98
Method: RUNOFF.003
NE Pesticide Scan - Runoff

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## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 6.72 | 0.50 |
| Deethylatrazine* | 18.98 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | 0.47 | 0.20 |
| Atrazine | 217.57 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | 2.06 | 0.20 |
| Metribuzin | <0.20 | 0.20 |
| Acetachlor | 0.68 | 0.20 |
| Alachlor | 0.37 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | 163.91 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 9/15/98

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **LF-2**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-885
Project: HOAGLAND
Collection Date: 5/20/98
Sampled By: KF
Received: 5/20/98
Batch# W98057
Analyzed: 9/ 4/98
Method: RUNOFF.003
NE Pesticide Scan - Runoff

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## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 0.88 | 0.50 |
| Deethylatrazine* | 2.19 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | 23.25 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | 0.20 | 0.20 |
| Metribuzin | <0.20 | 0.20 |
| Acetachlor | 0.63 | 0.20 |
| Alachlor | 0.46 | 0.20 |
| Cyanazine | 0.55 | 0.50 |
| Metolachlor | 21.80 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 9/15/98

Daniel D. Snow, Laboratory Manager

# Water Sciences Laboratory - Analytical Report

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **LF-3**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-886
Project: HOAGLAND
Collection Date: 5/20/98
Sampled By: KF
Received: 5/20/98
Batch# W98057
Analyzed: 9/ 4/98
Method: RUNOFF.003
NE Pesticide Scan - Runoff

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## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 0.60 | 0.50 |
| Deethylatrazine* | 1.53 | 0.20 |
| Trifluralin | 0.36 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | 15.60 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | <0.20 | 0.20 |
| Metribuzin | <0.20 | 0.20 |
| Acetachlor | 0.65 | 0.20 |
| Alachlor | 0.51 | 0.20 |
| Cyanazine | 0.57 | 0.50 |
| Metolachlor | 14.53 | 0.20 |
| Pendimethalin | 0.49 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 9/15/98

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*
103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **LF-4**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-887
Project: HOAGLAND
Collection Date: 5/20/98
Sampled By: KF
Received: 5/20/98
Batch# W98057
Analyzed: 9/ 4/98
Method: RUNOFF.003
NE Pesticide Scan - Runoff

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 0.52 | 0.50 |
| Deethylatrazine* | 1.24 | 0.20 |
| Trifluralin | 0.42 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | 13.25 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | <0.20 | 0.20 |
| Metribuzin | <0.20 | 0.20 |
| Acetachlor | 0.83 | 0.20 |
| Alachlor | 0.59 | 0.20 |
| Cyanazine | 0.58 | 0.50 |
| Metolachlor | 12.37 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 9/15/98

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **LF-5**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-888
Project: HOAGLAND
Collection Date: 5/20/98
Sampled By: KF
Received: 5/20/98
Batch# W98057
Analyzed: 9/ 4/98
Method: RUNOFF.003
NE Pesticide Scan - Runoff

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 1.09 | 0.50 |
| Deethylatrazine* | 3.23 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | 39.10 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | 0.34 | 0.20 |
| Metribuzin | <0.20 | 0.20 |
| Acetachlor | 0.83 | 0.20 |
| Alachlor | 0.54 | 0.20 |
| Cyanazine | 0.70 | 0.50 |
| Metolachlor | 34.92 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 9/15/98

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **LF-6**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-889
Project: HOAGLAND
Collection Date: 5/20/98
Sampled By: KF
Received: 5/20/98
Batch# W98057
Analyzed: 9/ 4/98
Method: RUNOFF.003
NE Pesticide Scan - Runoff

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 2.05 | 0.50 |
| Deethylatrazine* | 6.48 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | 85.50 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | 0.73 | 0.20 |
| Metribuzin | <0.20 | 0.20 |
| Acetachlor | 1.05 | 0.20 |
| Alachlor | 0.56 | 0.20 |
| Cyanazine | 0.86 | 0.50 |
| Metolachlor | 69.52 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 9/15/98

Daniel D. Snow, Laboratory Manager

Sample ID# **LF-7FD1**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-890
Project: HOAGLAND
Collection Date: 5/20/98
Sampled By: KF
Received: 5/20/98
Batch# W98057
Analyzed: 9/ 4/98
Method: RUNOFF.003
NE Pesticide Scan - Runoff

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## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 1.55 | 0.50 |
| Deethylatrazine* | 4.77 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | 58.31 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | 0.51 | 0.20 |
| Metribuzin | <0.20 | 0.20 |
| Acetachlor | 0.89 | 0.20 |
| Alachlor | 0.55 | 0.20 |
| Cyanazine | 0.75 | 0.50 |
| Metolachlor | 50.21 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 9/15/98

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **LF-8**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-892
Project: HOAGLAND
Collection Date: 5/20/98
Sampled By: KF
Received: 5/20/98
Batch# W98057
Analyzed: 9/ 4/98
Method: RUNOFF.003 NE Pesticide Scan - Runoff

---

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 2.96 | 0.50 |
| Deethylatrazine* | 9.23 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | 128.25 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | 1.05 | 0.20 |
| Metribuzin | <0.20 | 0.20 |
| Acetachlor | 1.10 | 0.20 |
| Alachlor | 0.65 | 0.20 |
| Cyanazine | 0.99 | 0.50 |
| Metolachlor | 98.49 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

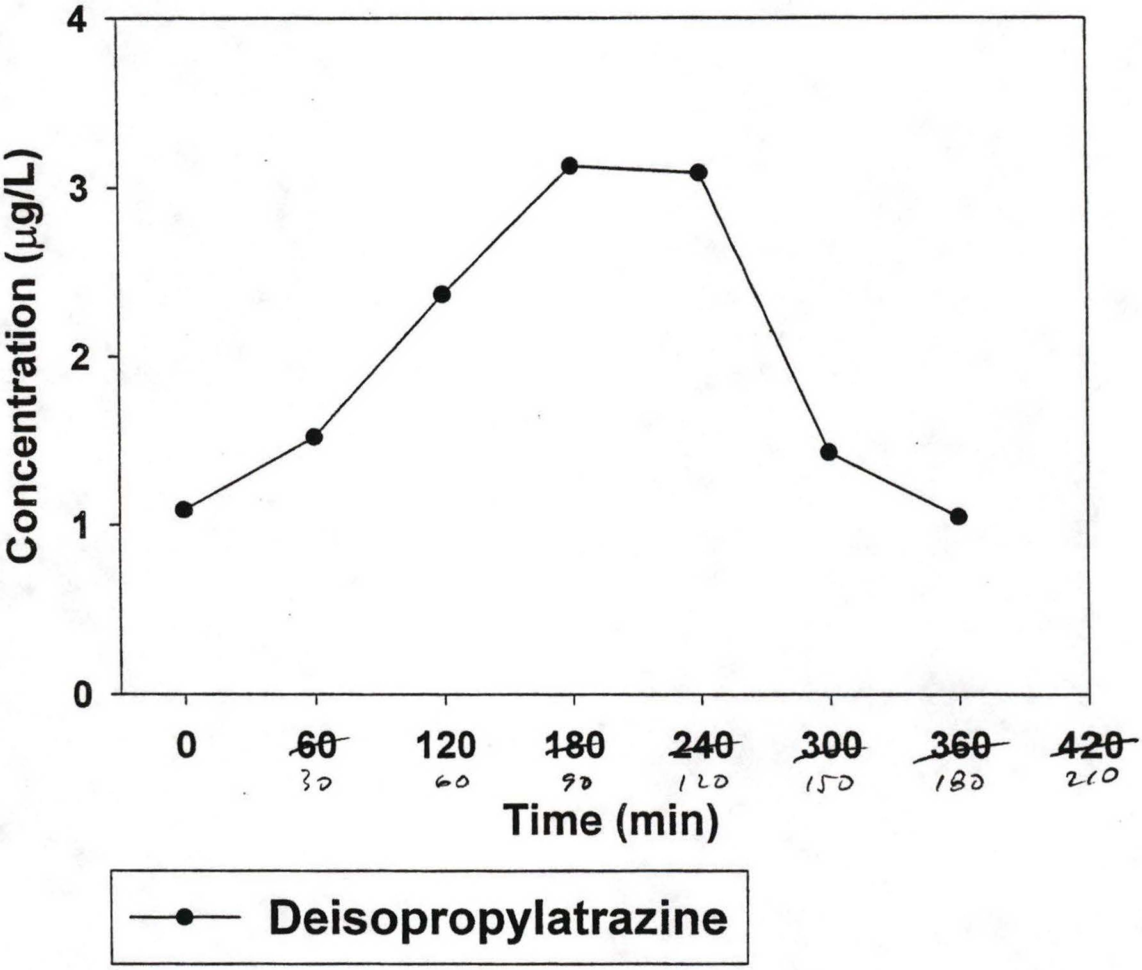
Results Approved: 9/15/98

Daniel D. Snow, Laboratory Manager

Large watershed

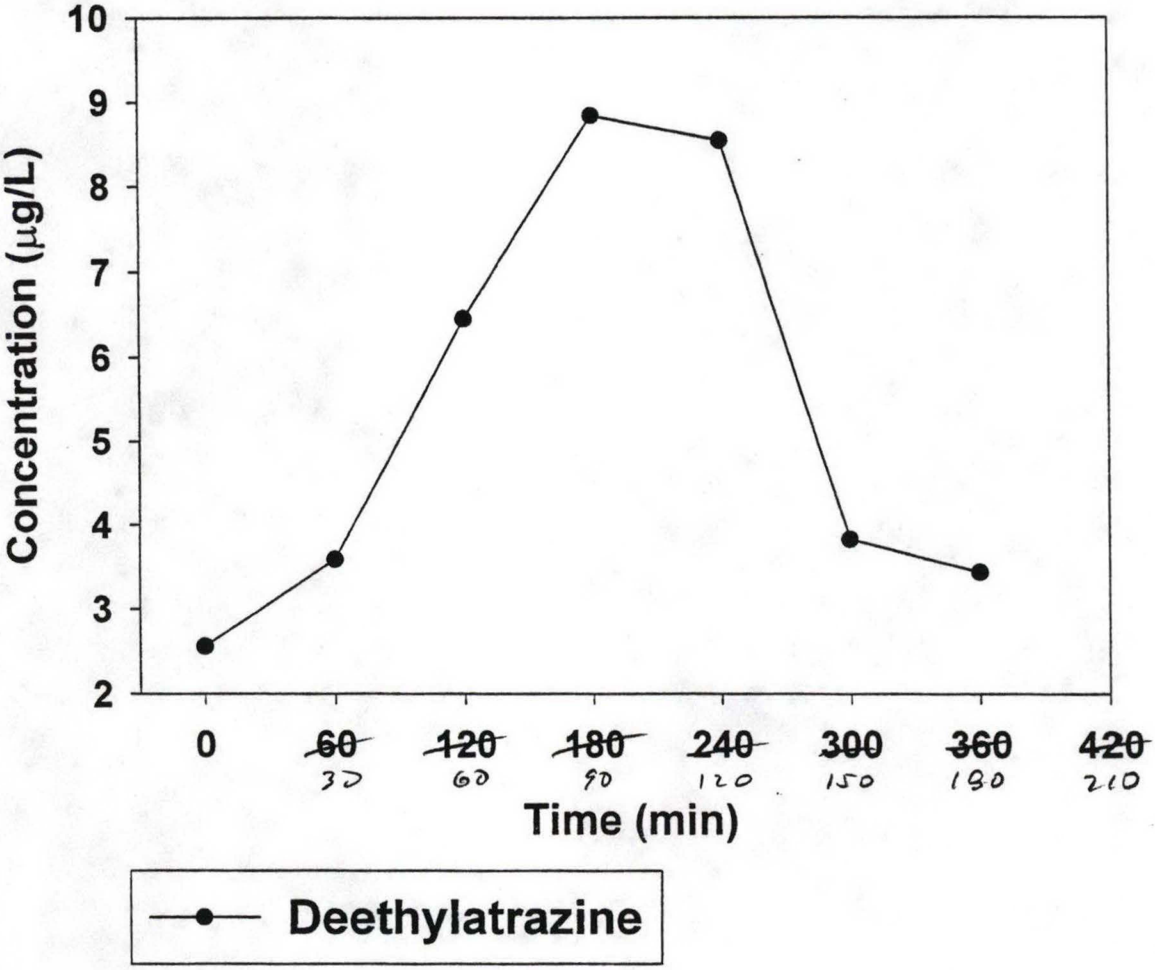
Table 1. Pesticide concentrations (µg/L) in LFN, 5/15/98 runoff event.

| Pesticide | Time (min) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 0 | 30<br>~~60~~ | 60<br>~~120~~ | 90<br>~~180~~ | 120<br>~~240~~ | ~~300~~ | 150<br>~~360~~ | 180<br>~~420~~ |
| Deisopropylatrazine | 1.09 | 1.52 | 2.37 | 3.13 | 3.09 | ~~1.78~~ | 1.43 | 1.05 |
| Deethylatrazine | 2.56 | 3.59 | 6.46 | 8.85 | 8.55 | ~~4.67~~ | 3.83 | 3.44 |
| Atrazine | 35.57 | 68.24 | 167.54 | 276.89 | 294.58 | ~~148.67~~ | 117.42 | 69.43 |
| Propazine | 0.35 | 0.67 | 1.34 | 1.98 | 1.92 | ~~1.10~~ | 0.88 | 0.61 |
| Metribuzin | 0.00 | 1.13 | 6.31 | 9.82 | 10.08 | ~~6.58~~ | 5.62 | 1.95 |
| Acetachlor | 0.87 | 0.82 | 1.35 | 1.99 | 1.97 | ~~1.46~~ | 1.29 | 0.87 |
| Alachlor | 28.16<br>~~21.16~~ | 44.31 | 29.98 | 36.61 | 34.70 | ~~22.90~~ | 22.87 | 46.35 |
| Cyanazine | 0.00 | 0.00 | 0.31 | 1.06 | 1.18 | ~~0.73~~ | 0.37 | 0.00 |
| Metolachlor | 0.77 | 0.96 | 9.04 | 22.27 | 23.54 | ~~13.91~~ | 10.75 | 3.11 |



LFN - 5/15/98

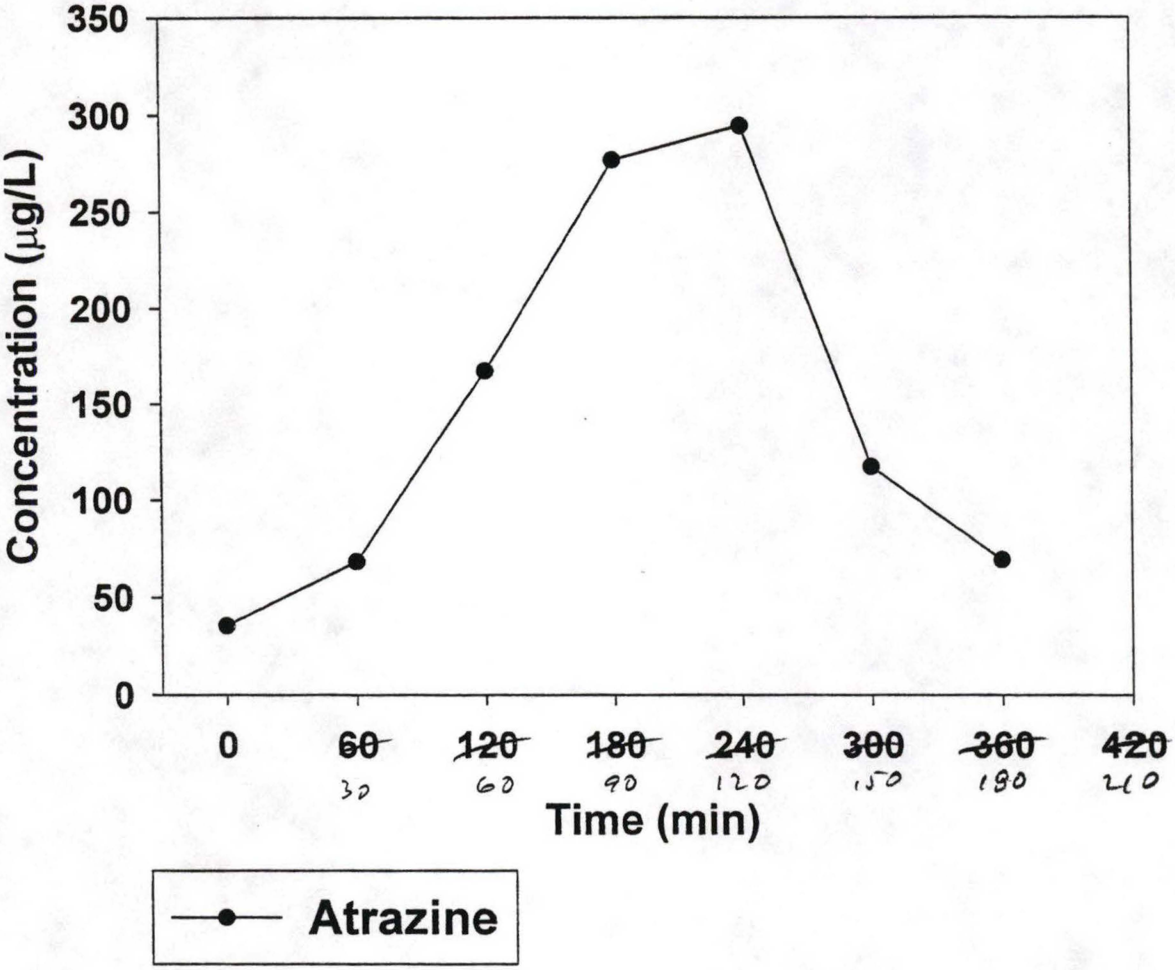
Concentration (μg/L)
4
3
2
1
0
0
~~60~~ 30
120 60
~~180~~ 90
~~240~~ 120
~~300~~ 150
~~360~~ 180
~~420~~ 210
Time (min)
Deisopropylatrazine

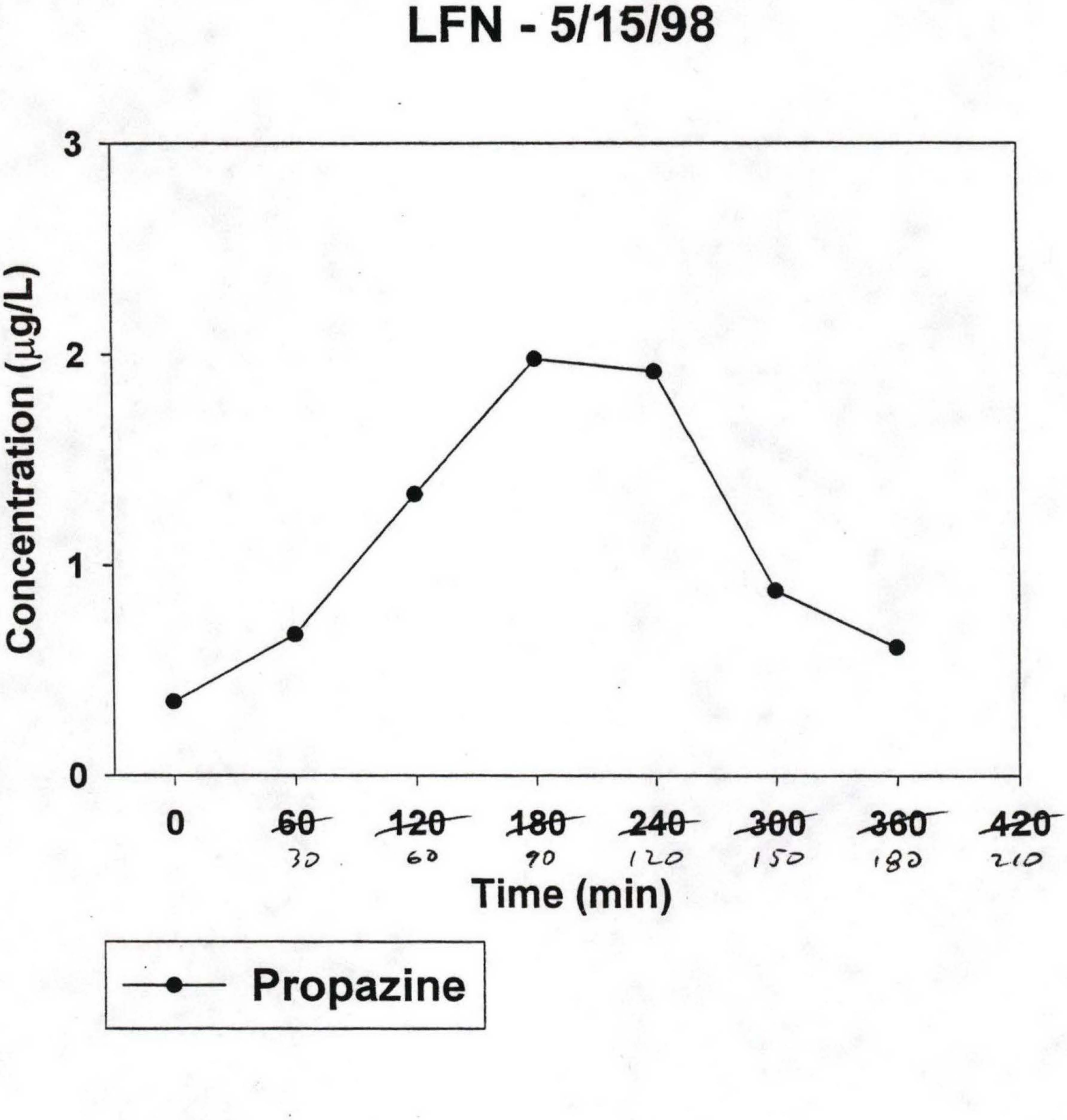


LFN - 5/15/98

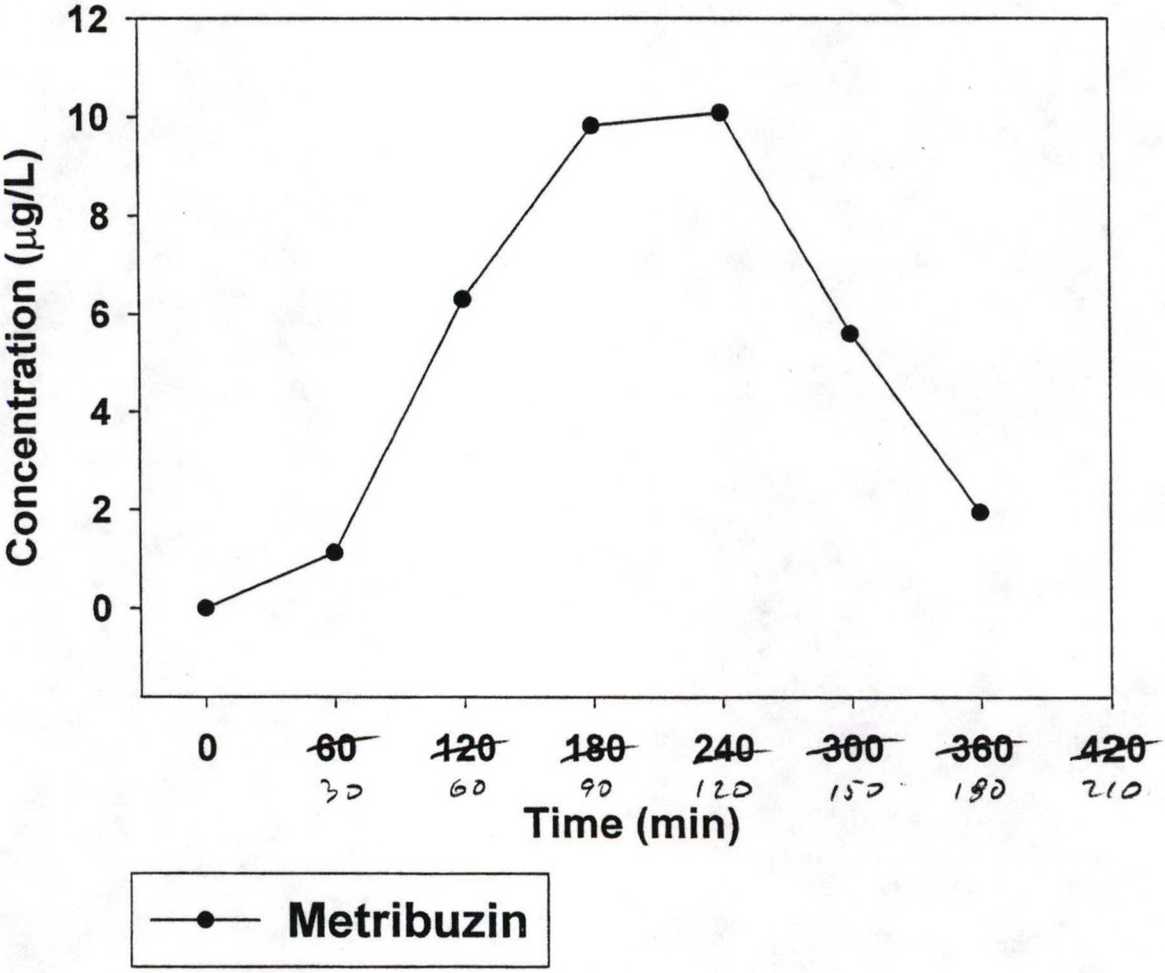
Concentration (μg/L)
10
9
8
7
6
5
4
3
2
0
~~60~~
30
~~120~~
60
~~180~~
90
~~240~~
120
~~300~~
150
~~360~~
180
~~420~~
210
Time (min)
Deethylatrazine

## LFN - 5/15/98

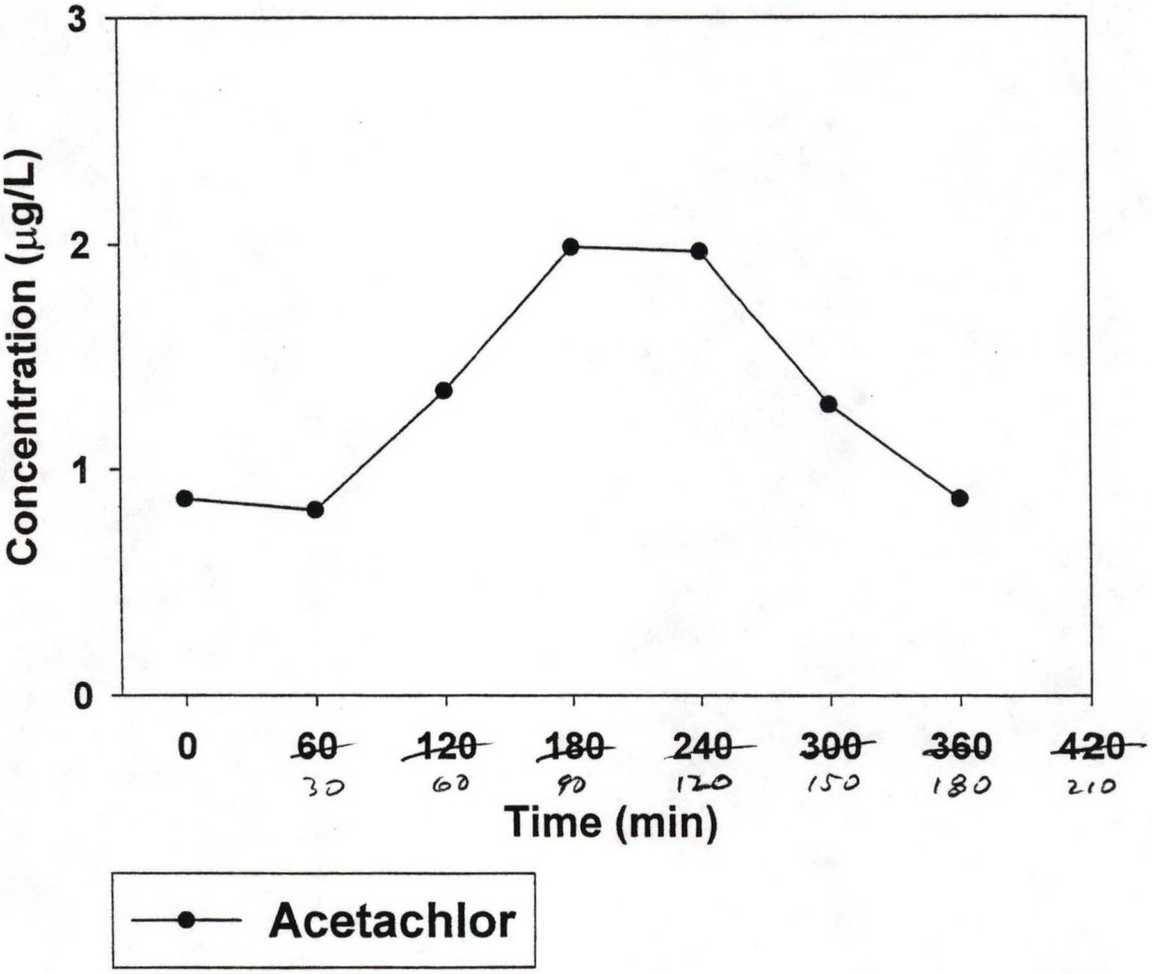

Concentration (μg/L)
350
300
250
200
150
100
50
0
0
~~60~~ 30
~~120~~ 60
~~180~~ 90
~~240~~ 120
~~300~~ 150
~~360~~ 180
~~420~~ 210
Time (min)
Atrazine


LFN - 5/15/98
Concentration (μg/L)
3
2
1
0
0
~~60~~ 30
~~120~~ 60
~~180~~ 90
~~240~~ 120
~~300~~ 150
~~360~~ 180
~~420~~ 210
Time (min)
Propazine

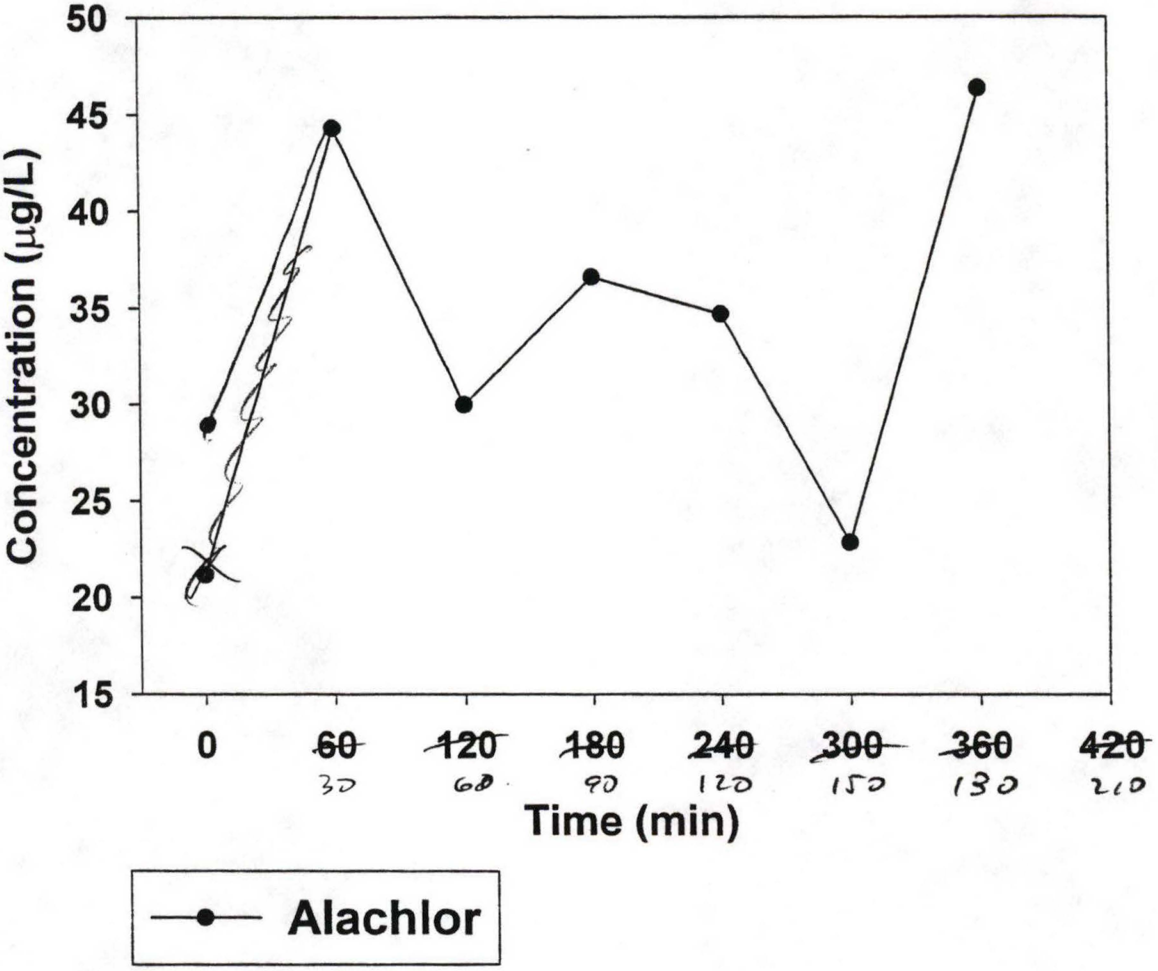
## LFN - 5/15/98


12
10
8
6
4
2
0
Concentration (μg/L)
0
~~60~~ 30
~~120~~ 60
~~180~~ 90
~~240~~ 120
~~300~~ 150
~~360~~ 180
~~420~~ 210
Time (min)
Metribuzin

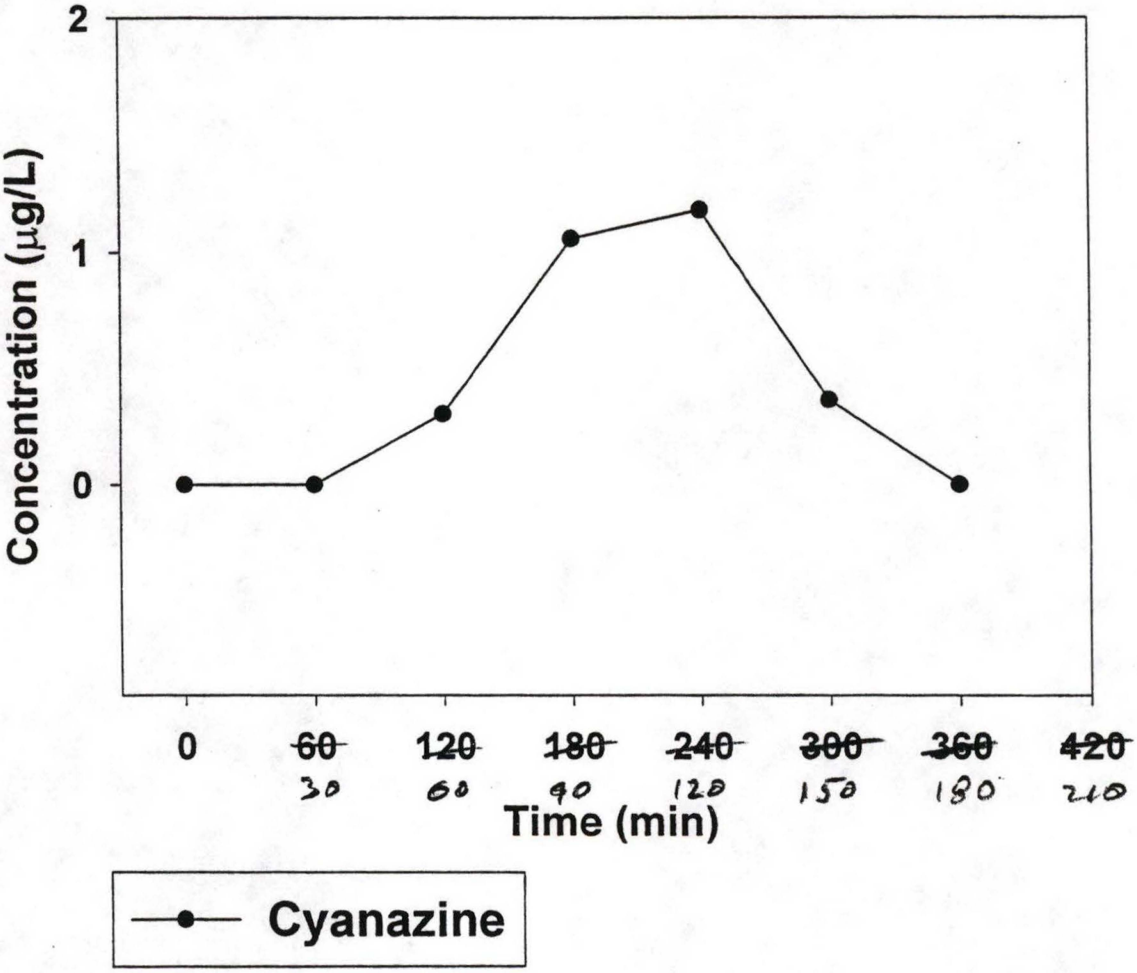
## LFN - 5/15/98

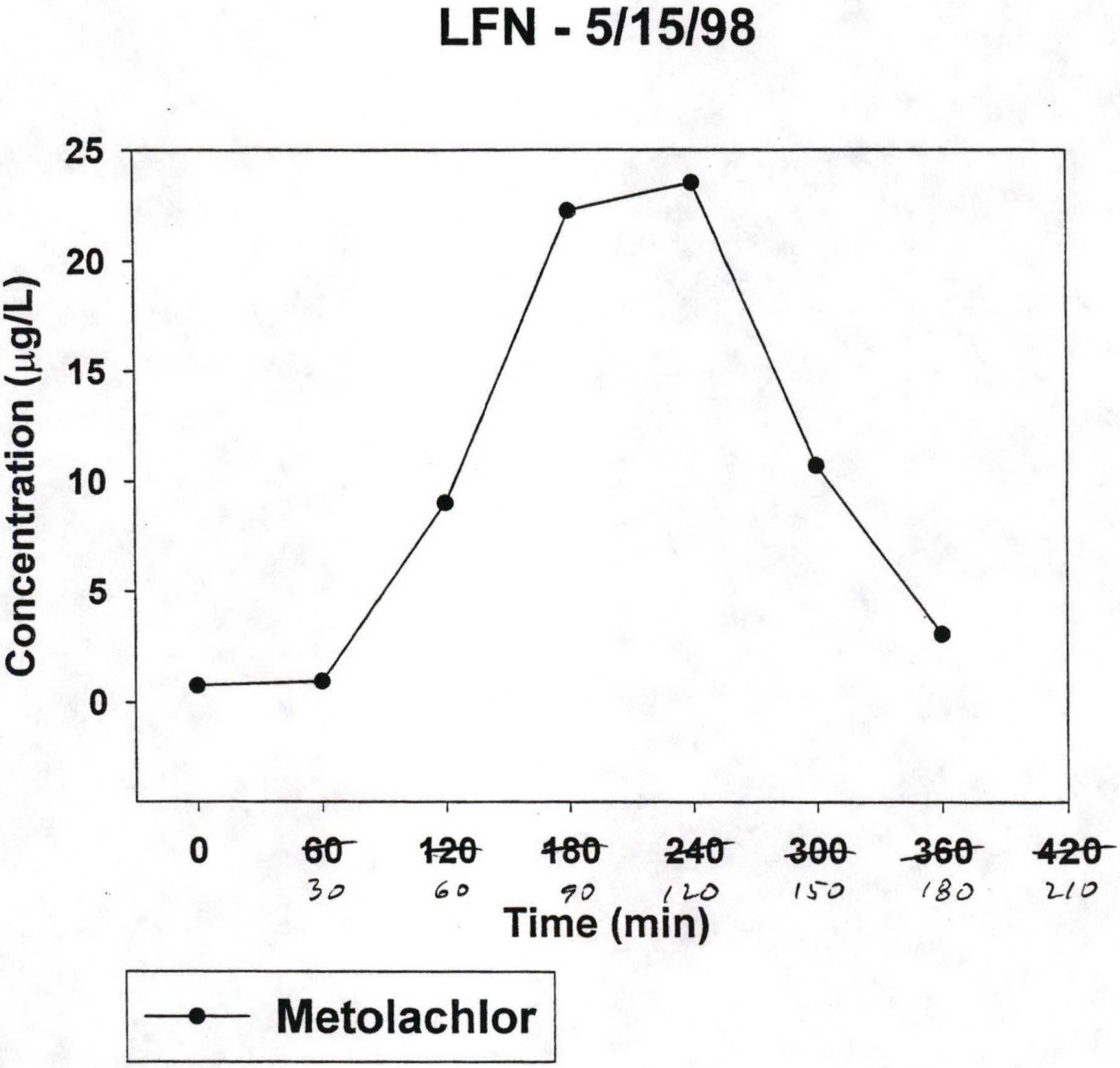

Concentration (μg/L)
3
2
1
0
0
~~60~~
30
~~120~~
60
~~180~~
90
~~240~~
120
~~300~~
150
~~360~~
180
~~420~~
210
Time (min)
Acetachlor

## LFN - 5/15/98


Concentration (µg/L)
50
45
40
35
30
25
20
15
0
~~60~~ 30
~~120~~ 60
~~180~~ 90
~~240~~ 120
~~300~~ 150
~~360~~ 180
~~420~~ 210
Time (min)
Alachlor

## LFN - 5/15/98


2
1
0
Concentration (μg/L)
0
~~60~~ 30
~~120~~ 60
~~180~~ 90
~~240~~ 120
~~300~~ 150
~~360~~ 180
~~420~~ 210
Time (min)
Cyanazine


LFN - 5/15/98
Concentration (μg/L)
25
20
15
10
5
0
0
~~60~~ 30
~~120~~ 60
~~180~~ 90
~~240~~ 120
~~300~~ 150
~~360~~ 180
~~420~~ 210
Time (min)
Metolachlor

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **LFN-1**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-835
Project: HOAGLAND
Collection Date: 5/15/98
Sampled By: KF
Received: 5/15/98
Batch# W98055
Analyzed: 8/19/98
Method: RUNOFF.003
NE Pesticide Scan - Runoff

---

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 1.23 | 0.50 |
| Deethylatrazine* | 2.85 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | 39.42 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | 0.39 | 0.20 |
| Metribuzin | <0.20 | 0.20 |
| Acetachlor | 0.91 | 0.20 |
| Alachlor | 31.93 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | 0.78 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 10/27/98

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **LFN-2**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-836
Project: HOAGLAND
Collection Date: 5/15/98
Sampled By: KF
Received: 5/15/98
Batch# W98055
Analyzed: 8/19/98
Method: RUNOFF.003
NE Pesticide Scan - Runoff

---

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 0.94 | 0.50 |
| Deethylatrazine* | 2.27 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | 31.71 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | 0.31 | 0.20 |
| Metribuzin | <0.20 | 0.20 |
| Acetachlor | 0.82 | 0.20 |
| Alachlor | 24.38 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | 0.75 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 10/27/98

Daniel D. Snow, Laboratory Manager

Sample ID# **LFN-4**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-837
Project: HOAGLAND
Collection Date: 5/15/98
Sampled By: KF
Received: 5/15/98
Batch# W98055
Analyzed: 8/19/98
Method: RUNOFF.003
NE Pesticide Scan - Runoff

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 1.28 | 0.50 |
| Deethylatrazine* | 2.97 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | 42.85 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | 0.46 | 0.20 |
| Metribuzin | 0.27 | 0.20 |
| Acetachlor | 0.81 | 0.20 |
| Alachlor | 37.69 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | 0.79 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 10/27/98

Daniel D. Snow, Laboratory Manager

# Water Sciences Laboratory - Analytical Report

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **LFN-5**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-838
Project: HOAGLAND
Collection Date: 5/15/98
Sampled By: KF
Received: 5/15/98
Batch# W98055
Analyzed: 8/19/98
Method: RUNOFF.003
NE Pesticide Scan - Runoff

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## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 1.76 | 0.50 |
| Deethylatrazine* | 4.20 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | 93.63 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | 0.88 | 0.20 |
| Metribuzin | 1.99 | 0.20 |
| Acetachlor | 0.83 | 0.20 |
| Alachlor | 50.93 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | 1.13 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 10/27/98

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **LFN-7**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

| | |
|---|---|
| Laboratory ID# | 98-839 |
| Project: | HOAGLAND |
| Collection Date: | 5/15/98 |
| Sampled By: | KF |
| Received: | 5/15/98 |
| Batch# | W98055 |
| Analyzed: | 8/19/98 |
| Method: | RUNOFF.003<br>NE Pesticide Scan - Runoff |

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## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 2.16 | 0.50 |
| Deethylatrazine* | 5.78 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | 0.47 | 0.20 |
| Atrazine | 135.99 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | 1.20 | 0.20 |
| Metribuzin | 5.41 | 0.20 |
| Acetachlor | 1.18 | 0.20 |
| Alachlor | 29.90 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | 5.98 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 10/27/98

Daniel D. Snow, Laboratory Manager

Sample ID# **LFN-8**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-840
Project: HOAGLAND
Collection Date: 5/15/98
Sampled By: KF
Received: 5/15/98
Batch# W98055
Analyzed: 8/19/98
Method: RUNOFF.003
NE Pesticide Scan - Runoff

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## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 2.58 | 0.50 |
| Deethylatrazine* | 7.14 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | 0.68 | 0.20 |
| Atrazine | 199.09 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | 1.47 | 0.20 |
| Metribuzin | 7.20 | 0.20 |
| Acetachlor | 1.51 | 0.20 |
| Alachlor | 30.05 | 0.20 |
| Cyanazine | 0.61 | 0.50 |
| Metolachlor | 12.10 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 10/27/98
Daniel D. Snow, Laboratory Manager

# Water Sciences Laboratory - Analytical Report

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **LFN-10**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-841
Project: HOAGLAND
Collection Date: 5/15/98
Sampled By: KF
Received: 5/15/98
Batch# W98055
Analyzed: 8/19/98
Method: RUNOFF.003
NE Pesticide Scan - Runoff

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## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 3.05 | 0.50 |
| Deethylatrazine* | 8.77 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | 0.89 | 0.20 |
| Atrazine | 275.02 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | 1.91 | 0.20 |
| Metribuzin | 9.44 | 0.20 |
| Acetachlor | 1.96 | 0.20 |
| Alachlor | 35.92 | 0.20 |
| Cyanazine | 1.01 | 0.50 |
| Metolachlor | 21.59 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 10/27/98
Daniel D. Snow, Laboratory Manager

*Water Sciences Laboratory - Analytical Report*
103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **LFN-11**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-842
Project: HOAGLAND
Collection Date: 5/15/98
Sampled By: KF
Received: 5/15/98
Batch# W98055
Analyzed: 8/19/98
Method: RUNOFF.003
NE Pesticide Scan - Runoff

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 3.20 | 0.50 |
| Deethylatrazine* | 8.93 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | 0.97 | 0.20 |
| Atrazine | 278.76 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | 2.04 | 0.20 |
| Metribuzin | 10.20 | 0.20 |
| Acetachlor | 2.02 | 0.20 |
| Alachlor | 37.30 | 0.20 |
| Cyanazine | 1.11 | 0.50 |
| Metolachlor | 22.95 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 10/27/98
Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **LFN-13**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-843
Project: HOAGLAND
Collection Date: 5/15/98
Sampled By: KF
Received: 5/15/98
Batch# W98055
Analyzed: 8/19/98
Method: RUNOFF.003
NE Pesticide Scan - Runoff

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## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 3.08 | 0.50 |
| Deethylatrazine* | 8.61 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | 1.01 | 0.20 |
| Atrazine | 279.11 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | 1.94 | 0.20 |
| Metribuzin | 10.03 | 0.20 |
| Acetachlor | 1.96 | 0.20 |
| Alachlor | 35.02 | 0.20 |
| Cyanazine | 1.14 | 0.50 |
| Metolachlor | 23.20 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 10/27/98

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **LFN-14**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-844
Project: HOAGLAND
Collection Date: 5/15/98
Sampled By: KF
Received: 5/15/98
Batch# W98055
Analyzed: 8/19/98
Method: RUNOFF.003
NE Pesticide Scan - Runoff

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 3.09 | 0.50 |
| Deethylatrazine* | 8.48 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | 1.04 | 0.20 |
| Atrazine | 310.04 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | 1.90 | 0.20 |
| Metribuzin | 10.12 | 0.20 |
| Acetachlor | 1.97 | 0.20 |
| Alachlor | 34.37 | 0.20 |
| Cyanazine | 1.21 | 0.50 |
| Metolachlor | 23.87 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 10/27/98

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **LFN-17**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-845
Project: HOAGLAND
Collection Date:5/15/98
Sampled By: KF
Received: 5/15/98
Batch# W98055
Analyzed: 8/19/98
Method: RUNOFF.003
NE Pesticide Scan - Runoff

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 1.78 | 0.50 |
| Deethylatrazine* | 4.67 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | 0.64 | 0.20 |
| Atrazine | 148.67 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | 1.10 | 0.20 |
| Metribuzin | 6.58 | 0.20 |
| Acetachlor | 1.46 | 0.20 |
| Alachlor | 22.90 | 0.20 |
| Cyanazine | 0.73 | 0.50 |
| Metolachlor | 13.91 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 10/27/98

Daniel D. Snow, Laboratory Manager

# Water Sciences Laboratory - Analytical Report

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **LFN-18**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-846
Project: HOAGLAND
Collection Date: 5/15/98
Sampled By: KF
Received: 5/15/98
Batch# W98055
Analyzed: 8/19/98
Method: RUNOFF.003
NE Pesticide Scan - Runoff

---

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 1.08 | 0.50 |
| Deethylatrazine* | 2.99 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | 0.26 | 0.20 |
| Atrazine | 86.17 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | 0.66 | 0.20 |
| Metribuzin | 4.66 | 0.20 |
| Acetachlor | 1.11 | 0.20 |
| Alachlor | 22.83 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | 7.58 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 10/27/98

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **LFN-20LD1**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-847
Project: HOAGLAND
Collection Date: 5/15/98
Sampled By: KF
Received: 5/15/98
Batch# W98055
Analyzed: 8/19/98
Method: RUNOFF.003
NE Pesticide Scan - Runoff

## **** *Results of Analysis* ****

| Analysis | (μg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 0.97 | 0.50 |
| Deethylatrazine* | 3.17 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | 67.61 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | 0.56 | 0.20 |
| Metribuzin | 2.00 | 0.20 |
| Acetachlor | 0.87 | 0.20 |
| Alachlor | 40.90 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | 3.34 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 10/27/98

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **LFN-21**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-849
Project: HOAGLAND
Collection Date: 5/15/98
Sampled By: KF
Received: 5/15/98
Batch# W98055
Analyzed: 8/19/98
Method: RUNOFF.003
NE Pesticide Scan - Runoff

## **** *Results of Analysis* ****

| Analysis | (μg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 1.12 | 0.50 |
| Deethylatrazine* | 3.70 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | 71.25 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | 0.66 | 0.20 |
| Metribuzin | 1.89 | 0.20 |
| Acetachlor | 0.87 | 0.20 |
| Alachlor | 51.79 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | 2.88 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 10/27/98

Daniel D. Snow, Laboratory Manager

# Water Sciences Laboratory - Analytical Report

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **SFN 1**

Report Results To:
Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-2027
Project: HOAGLAND
Collection Date: 11/10/98
Sampled By: KF
Received: 11/10/98
Batch# W98146
Analyzed: 2/24/99
Method: RUNOFF.003
NE Pesticide Scan - Runoff

---

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | <0.50 | 0.50 |
| Deethylatrazine* | 0.38 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | 0.27 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | <0.20 | 0.20 |
| Metribuzin | 0.35 | 0.20 |
| Acetachlor | <0.20 | 0.20 |
| Alachlor | 0.24 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | 0.23 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 3/ 8/99

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **SFN 4**

Report Results To:
Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-2028
Project: HOAGLAND
Collection Date: 11/10/98
Sampled By: KF
Received: 11/10/98
Batch# W98146
Analyzed: 2/24/99
Method: RUNOFF.003
NE Pesticide Scan - Runoff

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## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | <0.50 | 0.50 |
| Deethylatrazine* | <0.20 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | <0.20 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | <0.20 | 0.20 |
| Metribuzin | <0.20 | 0.20 |
| Acetachlor | <0.20 | 0.20 |
| Alachlor | <0.20 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | <0.20 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 3/ 8/99

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **SFN 7**

Report Results To:
Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-2029
Project: HOAGLAND
Collection Date: 11/10/98
Sampled By: KF
Received: 11/10/98
Batch# W98146
Analyzed: 2/24/99
Method: RUNOFF.003 NE Pesticide Scan - Runoff

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | <0.50 | 0.50 |
| Deethylatrazine* | <0.20 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | <0.20 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | <0.20 | 0.20 |
| Metribuzin | <0.20 | 0.20 |
| Acetachlor | <0.20 | 0.20 |
| Alachlor | <0.20 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | <0.20 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 3/ 8/99

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln. NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **SFN 10**

Report Results To: Kyle Hoagland
Forestry. Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln. NE 68583-0814

| | |
|---|---|
| Laboratory ID# | 98-2030 |
| Project: | HOAGLAND |
| Collection Date: | 11/10/98 |
| Sampled By: | KF |
| Received: | 11/10/98 |
| Batch# | W98146 |
| Analyzed: | 2/24/99 |
| Method: | RUNOFF.003<br>NE Pesticide Scan - Runoff |

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | <0.50 | 0.50 |
| Deethylatrazine* | <0.20 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | <0.20 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | <0.20 | 0.20 |
| Metribuzin | <0.20 | 0.20 |
| Acetachlor | <0.20 | 0.20 |
| Alachlor | <0.20 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | <0.20 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 3/ 8/99

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **SFN 13**

Report Results To:
Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-2031
Project: HOAGLAND
Collection Date: 11/10/98
Sampled By: KF
Received: 11/10/98
Batch# W98146
Analyzed: 2/25/99
Method: RUNOFF.003 NE Pesticide Scan - Runoff

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | <0.50 | 0.50 |
| Deethylatrazine* | <0.20 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | <0.20 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | <0.20 | 0.20 |
| Metribuzin | <0.20 | 0.20 |
| Acetachlor | <0.20 | 0.20 |
| Alachlor | <0.20 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | <0.20 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 3/ 8/99

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

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Sample ID# **SFN 16**

Report Results To:
Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

| | |
|---|---|
| Laboratory ID# | 98-2032 |
| Project: | HOAGLAND |
| Collection Date: | 11/10/98 |
| Sampled By: | KF |
| Received: | 11/10/98 |
| Batch# | W98146 |
| Analyzed: | 2/25/99 |
| Method: | RUNOFF.003<br>NE Pesticide Scan - Runoff |

---

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | <0.50 | 0.50 |
| Deethylatrazine* | <0.20 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | <0.20 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | <0.20 | 0.20 |
| Metribuzin | <0.20 | 0.20 |
| Acetachlor | <0.20 | 0.20 |
| Alachlor | <0.20 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | <0.20 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 3/ 8/99

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **SFN 19**

Report Results To:
Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-2033
Project: HOAGLAND
Collection Date: 11/10/98
Sampled By: KF
Received: 11/10/98
Batch# W98146
Analyzed: 2/25/99
Method: RUNOFF.003
NE Pesticide Scan -
Runoff

---

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | <0.50 | 0.50 |
| Deethylatrazine* | <0.20 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | <0.20 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | <0.20 | 0.20 |
| Metribuzin | <0.20 | 0.20 |
| Acetachlor | <0.20 | 0.20 |
| Alachlor | <0.20 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | <0.20 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 3/ 8/99

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **SFN 22**

Report Results To:
Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

| | |
|---|---|
| Laboratory ID# | 98-2034 |
| Project: | HOAGLAND |
| Collection Date: | 11/10/98 |
| Sampled By: | KF |
| Received: | 11/10/98 |
| Batch# | W98146 |
| Analyzed: | 2/25/99 |
| Method: | RUNOFF.003<br>NE Pesticide Scan - Runoff |

---

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | <0.50 | 0.50 |
| Deethylatrazine* | <0.20 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | <0.20 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | <0.20 | 0.20 |
| Metribuzin | <0.20 | 0.20 |
| Acetachlor | <0.20 | 0.20 |
| Alachlor | <0.20 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | <0.20 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 3/ 8/99

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **BFN 1 LD1** Large Flume

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-2021
Project: HOAGLAND
Collection Date: 11/10/98
Sampled By: KF
Received: 11/10/98
Batch# W98146
Analyzed: 2/24/99
Method: RUNOFF.003
NE Pesticide Scan -
Runoff

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | <0.50 | 0.50 |
| Deethylatrazine* | 0.50 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | <0.20 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | <0.20 | 0.20 |
| Metribuzin | <0.20 | 0.20 |
| Acetachlor | <0.20 | 0.20 |
| Alachlor | <0.20 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | 3.66 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 3/ 8/99

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **BFN 18**

Report Results To:
Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-2023
Project: HOAGLAND
Collection Date: 11/10/98
Sampled By: KF
Received: 11/10/98
Batch# W98146
Analyzed: 2/24/99
Method: RUNOFF.003
NE Pesticide Scan - Runoff

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | <0.50 | 0.50 |
| Deethylatrazine* | <0.20 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | <0.20 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | <0.20 | 0.20 |
| Metribuzin | <0.20 | 0.20 |
| Acetachlor | <0.20 | 0.20 |
| Alachlor | <0.20 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | 0.28 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 3/ 8/99

Daniel D. Snow, Laboratory Manager

*Water Sciences Laboratory - Analytical Report*
103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **BFN 20**

Report Results To:
Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-2024
Project: HOAGLAND
Collection Date: 11/10/98
Sampled By: KF
Received: 11/10/98
Batch# W98146
Analyzed: 2/24/99
Method: RUNOFF.003
NE Pesticide Scan - Runoff

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**** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | <0.50 | 0.50 |
| Deethylatrazine* | <0.20 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | <0.20 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | <0.20 | 0.20 |
| Metribuzin | <0.20 | 0.20 |
| Acetachlor | <0.20 | 0.20 |
| Alachlor | <0.20 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | 0.27 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 3/ 8/99

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **BFN 21**

Report Results To:
Kyle Hoagland
Forestry, Fisheries & Wildlife.
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-2025
Project: HOAGLAND
Collection Date: 11/10/98
Sampled By: KF
Received: 11/10/98
Batch# W98146
Analyzed: 2/24/99
Method: RUNOFF.003
NE Pesticide Scan - Runoff

---

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | <0.50 | 0.50 |
| Deethylatrazine* | <0.20 | 0.20 |
| Trifluralin | 0.43 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | <0.20 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | <0.20 | 0.20 |
| Metribuzin | <0.20 | 0.20 |
| Acetachlor | <0.20 | 0.20 |
| Alachlor | <0.20 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | 0.30 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | 0.64 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 3/ 8/99

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **BFN 23**

Report Results To:
Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 98-2026
Project: HOAGLAND
Collection Date: 11/10/98
Sampled By: KF
Received: 11/10/98
Batch# W98146
Analyzed: 2/24/99
Method: RUNOFF.003
NE Pesticide Scan - Runoff

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | <0.50 | 0.50 |
| Deethylatrazine* | <0.20 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | <0.20 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | <0.20 | 0.20 |
| Metribuzin | <0.20 | 0.20 |
| Acetachlor | <0.20 | 0.20 |
| Alachlor | <0.20 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | 0.21 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 3/ 8/99

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **LARGE FLUME**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 97-2757
Project: FFW-HOAGLAND
Collection Date:9/23/97
Sampled By: KDH
Received: 9/23/97
Batch# W97145
Analyzed: 11/ 5/97
Method: RUNOFF.003
NE Pesticide Scan - Runoff

---

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | <0.50 | 0.50 |
| Deethylatrazine* | <0.20 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | 0.21 | 0.20 |
| Atrazine | 0.25 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | <0.20 | 0.20 |
| Metribuzin | <0.20 | 0.20 |
| Acetachlor | <0.20 | 0.20 |
| Alachlor | 0.23 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | 0.24 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 2/11/98

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **#1 SM FLUME NORTH**
all

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 97-2756
Project: FFW-HOAGLAND
Collection Date: 9/23/97
Sampled By: KDH
Received: 9/23/97
Batch# W97145
Analyzed: 11/ 5/97
Method: RUNOFF.003
NE Pesticide Scan - Runoff

---

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | <0.50 | 0.50 |
| Deethylatrazine* | <0.20 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | <0.20 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | <0.20 | 0.20 |
| Metribuzin | <0.20 | 0.20 |
| Acetachlor | <0.20 | 0.20 |
| Alachlor | <0.20 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | <0.20 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 2/11/98

Daniel D. Snow, Laboratory Manager

# Water Sciences Laboratory - Analytical Report

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

small volume

Sample ID# **SF21LD1** North

?

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 97-3156
Project: FFW-HOAGLAND
Collection Date: 11/19/97
Sampled By: KF
Received: 11/19/97
Batch# W97163
Analyzed: 12/23/97
Method: RUNOFF.003
NE Pesticide Scan - Runoff

---

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | 0.53 | 0.50 |
| Deethylatrazine* | 1.17 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | 3.14 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | <0.20 | 0.20 |
| Metribuzin | <0.20 | 0.20 |
| Acetachlor | <0.20 | 0.20 |
| Alachlor | 0.35 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | 0.77 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 2/12/98

Daniel D. Snow, Laboratory Manager

Mead

# Water Sciences Laboratory - Analytical Report

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

South Little Flume

Sample ID# **SLF_1**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

| | |
|---|---|
| Laboratory ID# | 97-3132 |
| Project: | FFW-HOAGLAND |
| Collection Date: | 10/31/97 |
| Sampled By: | KF |
| Received: | 10/31/97 |
| Batch# | W97162 |
| Analyzed: | 12/22/97 |
| Method: | RUNOFF.003<br>NE Pesticide Scan - Runoff |

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | <0.50 | 0.50 |
| Deethylatrazine* | <0.20 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | <0.20 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | <0.20 | 0.20 |
| Metribuzin | <0.20 | 0.20 |
| Acetachlor | <0.20 | 0.20 |
| Alachlor | <0.20 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | <0.20 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 2/11/98

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **SLF_4**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 97-3133
Project: FFW-HOAGLAND
Collection Date: 10/31/97
Sampled By: KF
Received: 10/31/97
Batch# W97162
Analyzed: 12/22/97
Method: RUNOFF.003
NE Pesticide Scan - Runoff

---

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | <0.50 | 0.50 |
| Deethylatrazine* | <0.20 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | <0.20 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | <0.20 | 0.20 |
| Metribuzin | <0.20 | 0.20 |
| Acetachlor | <0.20 | 0.20 |
| Alachlor | <0.20 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | <0.20 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 2/11/98

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **SLF_7LD1**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 97-3134
Project: FFW-HOAGLAND
Collection Date: 10/31/97
Sampled By: KF
Received: 10/31/97
Batch# W97162
Analyzed: 12/22/97
Method: RUNOFF.003
NE Pesticide Scan - Runoff

---

**** *Results of Analysis* ****

| Analysis | (μg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | <0.50 | 0.50 |
| Deethylatrazine* | <0.20 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | <0.20 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | <0.20 | 0.20 |
| Metribuzin | <0.20 | 0.20 |
| Acetachlor | <0.20 | 0.20 |
| Alachlor | <0.20 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | <0.20 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 2/11/98

DDS

Daniel D. Snow, Laboratory Manager

Mead

# Water Sciences Laboratory - Analytical Report

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

North Small Flume

**Sample ID# NSF_1**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 97-3124
Project: FFW-HOAGLAND
Collection Date: 10/31/97
Sampled By: KF
Received: 10/31/97
Batch# W97162
Analyzed: 12/22/97
Method: RUNOFF.003 NE Pesticide Scan - Runoff

---

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | <0.50 | 0.50 |
| Deethylatrazine* | <0.20 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | <0.20 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | <0.20 | 0.20 |
| Metribuzin | <0.20 | 0.20 |
| Acetachlor | <0.20 | 0.20 |
| Alachlor | <0.20 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | <0.20 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Note → Permethrin | 1.01 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 2/11/98

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **NSF_4**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 97-3125
Project: FFW-HOAGLAND
Collection Date: 10/31/97
Sampled By: KF
Received: 10/31/97
Batch# W97162
Analyzed: 12/22/97
Method: RUNOFF.003
NE Pesticide Scan - Runoff

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | <0.50 | 0.50 |
| Deethylatrazine* | <0.20 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | <0.20 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | <0.20 | 0.20 |
| Metribuzin | <0.20 | 0.20 |
| Acetachlor | <0.20 | 0.20 |
| Alachlor | <0.20 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | 0.22 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 2/11/98

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **NSF_7**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 97-3126
Project: FFW-HOAGLAND
Collection Date: 10/31/97
Sampled By: KF
Received: 10/31/97
Batch# W97162
Analyzed: 12/22/97
Method: RUNOFF.003
NE Pesticide Scan - Runoff

## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | < 0.20 | 0.20 |
| Butylate | < 0.20 | 0.20 |
| Propachlor | < 0.20 | 0.20 |
| Deisopropylatrazine* | < 0.50 | 0.50 |
| Deethylatrazine* | < 0.20 | 0.20 |
| Trifluralin | < 0.20 | 0.20 |
| Simazine | < 0.20 | 0.20 |
| Atrazine | < 0.20 | 0.20 |
| Prometon | < 0.20 | 0.20 |
| Propazine | < 0.20 | 0.20 |
| Metribuzin | < 0.20 | 0.20 |
| Acetachlor | < 0.20 | 0.20 |
| Alachlor | < 0.20 | 0.20 |
| Cyanazine | < 0.50 | 0.50 |
| Metolachlor | 0.25 | 0.20 |
| Pendimethalin | < 0.20 | 0.20 |
| Permethrin | < 0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 2/11/98

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **NSF_10**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 97-3127
Project: FFW-HOAGLAND
Collection Date: 10/31/97
Sampled By: KF
Received: 10/31/97
Batch# W97162
Analyzed: 12/22/97
Method: RUNOFF.003
NE Pesticide Scan - Runoff

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## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | <0.50 | 0.50 |
| Deethylatrazine* | <0.20 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | <0.20 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | <0.20 | 0.20 |
| Metribuzin | <0.20 | 0.20 |
| Acetachlor | <0.20 | 0.20 |
| Alachlor | <0.20 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | 0.27 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 2/11/98

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **NSF_13**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 97-3128
Project: FFW-HOAGLAND
Collection Date: 10/31/97
Sampled By: KF
Received: 10/31/97
Batch# W97162
Analyzed: 12/22/97
Method: RUNOFF.003
NE Pesticide Scan - Runoff

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## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | <0.50 | 0.50 |
| Deethylatrazine* | <0.20 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | <0.20 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | <0.20 | 0.20 |
| Metribuzin | <0.20 | 0.20 |
| Acetachlor | <0.20 | 0.20 |
| Alachlor | <0.20 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | 0.31 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 2/11/98

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **NSF_16**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 97-3129
Project: FFW-HOAGLAND
Collection Date: 10/31/97
Sampled By: KF
Received: 10/31/97
Batch# W97162
Analyzed: 12/22/97
Method: RUNOFF.003
NE Pesticide Scan - Runoff

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## **** *Results of Analysis* ****

| Analysis | (μg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | <0.50 | 0.50 |
| Deethylatrazine* | <0.20 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | <0.20 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | <0.20 | 0.20 |
| Metribuzin | 0.30 | 0.20 |
| Acetachlor | <0.20 | 0.20 |
| Alachlor | <0.20 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | 0.29 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 2/11/98

Daniel D. Snow, Laboratory Manager

Water Sciences Laboratory - Analytical Report
103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **NSF_19**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 97-3130
Project: FFW-HOAGLAND
Collection Date: 10/31/97
Sampled By: KF
Received: 10/31/97
Batch# W97162
Analyzed: 12/22/97
Method: RUNOFF.003
NE Pesticide Scan - Runoff

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**** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | <0.50 | 0.50 |
| Deethylatrazine* | <0.20 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | <0.20 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | <0.20 | 0.20 |
| Metribuzin | <0.20 | 0.20 |
| Acetachlor | <0.20 | 0.20 |
| Alachlor | <0.20 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | 0.28 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 2/11/98

Daniel D. Snow, Laboratory Manager

# *Water Sciences Laboratory - Analytical Report*

103 Natural Resources Hall University of Nebraska Lincoln, NE 68583- p.402 472 7558 f.402 472 3574

Sample ID# **NSF_22**

Report Results To: Kyle Hoagland
Forestry, Fisheries & Wildlife
101 Plant Industry
UNL East Campus
Lincoln, NE 68583-0814

Laboratory ID# 97-3131
Project: FFW-HOAGLAND
Collection Date: 10/31/97
Sampled By: KF
Received: 10/31/97
Batch# W97162
Analyzed: 12/22/97
Method: RUNOFF.003
NE Pesticide Scan - Runoff

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## **** *Results of Analysis* ****

| Analysis | (µg/L) | Reporting Limit |
|---|---|---|
| EPTC | <0.20 | 0.20 |
| Butylate | <0.20 | 0.20 |
| Propachlor | <0.20 | 0.20 |
| Deisopropylatrazine* | <0.50 | 0.50 |
| Deethylatrazine* | <0.20 | 0.20 |
| Trifluralin | <0.20 | 0.20 |
| Simazine | <0.20 | 0.20 |
| Atrazine | <0.20 | 0.20 |
| Prometon | <0.20 | 0.20 |
| Propazine | <0.20 | 0.20 |
| Metribuzin | <0.20 | 0.20 |
| Acetachlor | <0.20 | 0.20 |
| Alachlor | <0.20 | 0.20 |
| Cyanazine | <0.50 | 0.50 |
| Metolachlor | 0.29 | 0.20 |
| Pendimethalin | <0.20 | 0.20 |
| Permethrin | <0.50 | 0.50 |

Note: * indicates atrazine metabolite

Results Approved: 2/11/98

Daniel D. Snow, Laboratory Manager

University of
Nebraska
Lincoln
Institute of Agriculture and Natural Resources

School of Natural Resource Sciences
Water Center/Environmental Programs
103 Natural Resources Hall
P.O. Box 830844
Lincoln, NE 68583-0844
(402) 472-3305
FAX (402) 472-3574

2/11/99

Dr. Kyle Hoagland
School of Natural Resource Sciences
101 Plant Industry
EC - 0814

Dear Kyle,

Enclosed please find the results of our pesticide analysis of 74 runoff samples for the Blue River Basin Project delivered to the Water Sciences Laboratory during May through October of last year. We are currently processing 40 additional samples for the Blue River Basin Project and hope to complete these withing the next two weeks. The extended analysis time is due to reanalysis of a high percentage of samples that do not meet quality control requirements. Sorry for the delay.

Please let me know what account you like to charge the Mead Project (35 samples total) analyses to. If you have any questions, feel free to give me a call (472-7539).

Sincerely,

Dr. Daniel D. Snow
Manager, Water Sciences Laboratory

enc.

W98060. W98067, W98068, W98099, W98100, W98140

University of
Nebraska
Lincoln
Institute of Agriculture and Natural Resources

School of Natural Resource Sciences
Water Center/Environmental Programs
103 Natural Resources Hall
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(402) 472-3305
FAX (402) 472-3574

12/17/98

Dr. Kyle Hoagland
School of Natural Resource Sciences
101 Plant Industry
EC - 0814

Dear Kyle,

Enclosed please find the results of our pesticide analysis of 48 runoff samples for the Blue River Basin Project delivered to the Water Sciences Laboratory during June of this year. We are currently processing 120 additional samples for the Blue River Basin Project. The extended analysis time is due to reanalysis of a high percentage of samples that do not meet quality control requirements. Sorry for the delay.

Please let me know what account you like to charge the Mead Project (35 samples total) analysis to. If you have any questions, feel free to give me a call (472-7539).

Sincerely,

Dr. Daniel D. Snow
Manager, Water Sciences Laboratory

enc.

W98079. W98080, W98081

University of
Nebraska
Lincoln
Institute of Agriculture and Natural Resources

School of Natural Resource Sciences
Water Center/Environmental Programs
103 Natural Resources Hall
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(402) 472-3305
FAX (402) 472-3574

10/27/98

Dr. Kyle Hoagland
School of Natural Resource Sciences
101 Plant Industry
EC - 0814

Dear Kyle,

Enclosed please find the results of our pesticide analysis of 63 runoff samples for the Blue River Basin Project and 14 samples from the Mead site delivered to the Water Sciences Laboratory during May and June of this year. We are currently processing 162 additional samples for the Blue River Basin Project.

Let me know what account you like to charge the Mead Project (35 samples total) analysis to. If you have any questions, feel free to give me a call (472-7539).

Sincerely,

Dr. Daniel D. Snow
Manager, Water Sciences Laboratory

enc.

W98055, W98059, W98069, W98070

University of Nebraska–Lincoln University of Nebraska Medical Center University of Nebraska at Omaha University of Nebraska at Kearney

University of
Nebraska
Lincoln
Institute of Agriculture and Natural Resources

Water Center/Environmental Programs
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(402) 472-3305
FAX (402) 472-3574

9/16/98

Dr. Kyle Hoagland
School of Natural Resource
101 Plant Industry
EC - 0814

Dear Kyle,

Enclosed please find the results of our pesticide analysis of 48 runoff samples for the Blue River Basin Project and 21 samples from the Mead site delivered to the Water Sciences Laboratory during May and June of this year. We are currently processing 222 additional samples for the Blue River Basin Project and 14 from the Mead site.

If you have any questions, feel free to give me a call (472-7539).

Sincerely,

Dr. Daniel D. Snow
Manager, Water Sciences Laboratory

enc.

W98056, W98057, W98056, W98065

University of Nebraska–Lincoln University of Nebraska Medical Center University of Nebraska at Omaha University of Nebraska at Kearney

University of
Nebraska
Lincoln

School of Natural Resources
Water Sciences Laboratory
103 Natural Resources Hall
University of Nebraska
Lincoln, NE 68583-0844

2/12/98

Dr. Kyle Hoagland
School of Natural Resource
101 Plant Industry
EC - 0814

Dear Kyle,

Enclosed please find the analytical results for 47 runoff samples for the Blue River Basin Project delivered to the Water Sciences Laboratory during September, October, and November 1997. There also is one result enclosed for a sample collected in June that had to be re-extracted and analyzed in November. There was one other runoff sample collected on June 21 (Fairmont#19) which was to be re-extracted, however, it was inadvertently discarded before it could be processed.

I believe this completes the analysis of all samples (161) received in 1997 for this project. Please let me know what would you like our lab to do with the sample bottles once they have been cleaned and combusted. If you have any questions, feel free to give me a call (472-7539).

Sincerely,

Dr. Daniel D. Snow
Manager, Water Sciences Laboratory

enc.

W97107, W97145, W97162, W97163, W97181

ROCKY MOUNTAIN RESEARCH STATION LIBRARY
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FORT COLLINS, CO 80526-2098